System Operator

Strategic Business Plan

February 2018

System Operator

Planning a better network for you

1. Foreword *by Jo Kaye, Managing Director, System Operator*

I am pleased to set out, in this Strategic Business Plan, our plan and vision for the railway's System Operator in Control Period 6 (CP6) and beyond.

Role of the System Operator

Why we exist (our role)
We plan changes to the GB railway system so that the needs of passengers and freight customers are balanced to support economic growth.

What we want to be (our vision)
Our vision is to become the recognised expert trusted by decision makers to plan the GB railway.

How we will do this (our strategic intent)
We will support each other to realise our full potential, building confidence and being a better System Operator. We will be transparent about how we optimise the use of the existing network and identify opportunities to create new system capability.

The railway system drives economic growth. It transports people to and from work, education and social activities and it carries goods to markets, connecting businesses. Many parts of the network are at or approaching capacity at certain times of the day. Over the longer term we expect this demand for rail to continue to grow, so capacity is a valuable commodity. Getting best use of track and station capacity today, and expanding the capacity of the system in an affordable and value for money way is a key challenge for the whole industry.

As the System Operator, capacity is at the heart of everything we do. Our activities span the breadth of railway planning in terms of time horizons - what the railway could look like in 30 years to tomorrow's timetable - and the full spectrum of system opportunities to deliver more capacity including better timetables, longer and more trains, new technology and, where necessary, new infrastructure.

We provide a whole-system, long term view, informed and integrated by the detailed knowledge we have from planning the network and by the industry-wide interfaces we have with every train operating customer, route and infrastructure manager. Our services extend beyond Network Rail. Trains already run between Network Rail routes and infrastructure owned by other infrastructure managers, such as High Speed 1 (HS1), Transport for London (TfL), Nexus and Heathrow Airport.

The network needs to be planned as an integrated whole, irrespective of ownership. This will be particularly important in the next few years, as Crossrail and High Speed 2 (HS2) become operational, and as other infrastructure managers emerge.

We are a distinct but connected part of Network Rail. The separation of our role in managing capacity allocation from the routes allows route businesses to work locally in collaborative models, such as Alliances, avoiding conflicts of interest in the provision of network access.

Our unique role within the industry as a centre of excellence, our expertise in analysis of the network, station capacity and operational train planning, combined with our position within Network Rail and relationship with the rest of the rail industry, places the System Operator as a credible source of advice in relation to the GB rail network.

This position enables us to plan and develop a railway across Great Britain that is more than the sum of its parts. We do this to ensure the railway remains a cohesive and seamless network for its users.

Our role also means we can engage beyond the rail industry and make a significant contribution to broader policy debates on the role of rail in a wider transport, land use planning and economic context.

Control Period 6 will see us evolve our expertise in planning the railway - supporting the further development of robust socio-economic analysis and options for future network investment, to underpin improved decision making

about the future of the railway and its place in the overall transport system.

The System Operator must be a source of high quality analysis for the industry, funders and potential investors, to underpin the decisions that will be required in developing the network to be fit for the demands the future will place on it. The creation of a distinct System Operator provides an opportunity to offer a completely different quality of analysis to support these critical decisions and new capabilities will be required to achieve this.

We will continue our drive for an improved network timetable; the product of the System Operator that most users would recognise, and is one of the key determinants of good operational performance of the railway.

What we do

Our key products and services reflect the breadth of our activities:

- Working with the rest of the industry we provide **advice** to governments and funders on the future development of the rail network, and its potential to deliver for its customers and support economic growth and other key societal outcomes.

- This advice is supported and underpinned by **analysis** of the long term prospects of the markets rail serves, the development of long term strategies and plans to deliver desired outcomes, and the development of business cases to assess the potential costs and benefits to support the case for funding.

- The System Operator enables the delivery of new outputs to the railway system through **planning** of new train services, by providing **advice** to the franchising process and by **specifying** the service output requirements of any new infrastructure and broader system changes required to support output changes.

- The System Operator works with Network Rail route teams and train operators to **decide** the best allocation of capacity and creates operational timetables that meet the needs of train operators.

Throughout this operating model, the System Operator must understand the choices and trade-offs of different solutions and retain a line of sight to the intended benefits from long term planning through to the operational timetable. We recognise that many decisions that affect the outputs of the railway are made by others, especially funders and franchising authorities. The System Operator must provide high quality advice to these decision-makers and be clear on the consequences of different choices that could be made.

How we do our job

How we work is as important as what we do.

Safety is at the heart of everything that we do. As System Operator we make a meaningful contribution to improving whole railway system safety in our work. We recognise that vital contribution to the safety of the railway system by embedding a safety culture across the organisation, and actively thinking about safety throughout the delivery of our processes in each part of our operating model.

We are accountable to our customers and stakeholders - to governments and other funders, to train operators and to Network Rail routes and other infrastructure managers - for what we do. We are establishing new governance arrangements so that we can demonstrate transparency in our decision making and provide confidence to our customers and stakeholders.

Even-handedness and an understanding of the rationale behind our advice and decisions are essential so that we are trusted in our role, and customers and funders are able to work confidently with us in the development of future investments and services.

Openness and transparency are therefore an essential part of our agenda. We recognise that our decisions and recommendations can be complex to articulate, often balancing the needs of many stakeholders and considering system-wide factors such as effects on punctuality, maintenance, and service flexibility. More needs to be done to inform the industry and passengers as to why we take the decisions we do and their implications; as System Operator we will take accountability for the understanding and articulation of these trade-offs.

We must also be - and be seen to be – independent of any vested interests

that may originate from being within Network Rail and working closely with the Route Businesses; to mitigate this risk our governance framework will encourage transparency and independence. But it is important that we remain connected to the operational railway, and aligned to the success of it, to prevent us becoming a body devoid of the practical and contextual understanding that is needed for good decision-making.

The plan

We have welcomed the opportunity to consult extensively with our customers, funders and route businesses as part of the development of this plan, to understand how we can support their objectives while planning the network holistically and supporting the economic growth of Great Britain.

As an organisation, the System Operator has evolved within Network Rail, being formally established in May 2017. From CP6 we will be separately regulated by the Office of Rail and Road (ORR) with our own settlement in parallel with the arrangements for Route Businesses. During our consultations on this Strategic Business Plan (SBP), we have heard from our customers how keen they are that the importance of our activity is widely understood and recognised within industry; separate regulation will support this and is fundamental to our plans in this area.

This System Operator SBP therefore has a number of purposes:

- It sets out to our customers and wider industry the role of the System Operator and how we fit within the industry and Network Rail;
- It sets out to our customers what and how we will deliver for them in CP6, and how we have consulted with them to determine this;
- It sets out to the regulator what and how we will deliver in CP6 and the level of funding required to do this efficiently;
- It describes the regulatory framework and outputs that will allow ORR to hold us to account throughout the control period;
- It sets out our response to the requirements set out by Ministers in the High Level Output Specifications published in July 2017.

The plan is based on a number of key assumptions and publicly committed milestones which drive our activity level, for example the Department for Transport (DfT) franchising timetable and published milestones for HS2.

Another key driver of our activity and outputs is the level of enhancement funding for the railway. In preparing our plan we assume such funding will be commensurate with that available in Control Period 5 (CP5) for Scotland and the Statement of Funds Available for England & Wales. We also state the anticipated funding for major projects.

And we also assume that we remain as part of Network Rail with all the interface efficiencies that brings.

Our plan is structured as follows:

- A description of the role and purpose of the System Operator and how we fit within the industry and Network Rail. This includes an explanation of how we are responding to devolution of both funders and operations.
- Identification of our customers, and the priorities and requirements that they expressed through the consultation process.
- A description of our current scorecard, how we will create scorecards for CP6 that reflect the requirements of our customers, and an overview of the plans that will deliver those requirements.
- The efficient headcount and expenditure required to deliver the outputs for our customers.
- The organisation structure, processes and investment required to deliver for our customers.

As always we welcome your feedback on this plan and on what we do, and I would be pleased to hear from you.

Jo Kaye
Managing Director, System Operator

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2.1 Role and purpose

System Operator	
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The railway system drives economic growth. It transports people to and from work, education and social activities and it carries goods to markets, connecting businesses. Many parts of the network are at, or approaching capacity at certain times of the day. Over the longer term we expect this demand for rail to continue to grow, so capacity is a valuable commodity. Getting best use of track and station capacity today, and expanding the capacity of the system in an affordable and value for money way is a key challenge for the whole industry.

We make Great Britain's railway greater than the sum of its parts by being the 'glue' that holds the network together. We provide a whole-system, long term view, informed by the detailed knowledge we have from planning and timetabling the network and from the industry-wide interfaces we have with every train operating customer, route and infrastructure manager.

We plan the railway cohesively as a network considering the wider socio-economic impacts of investment decisions, and allocating access through a network-wide timetabling process.

The operational boundaries of many train operators are not generally contained within a single route. With many operators crossing one or more route boundaries, the effective and seamless management of 'cross boundary' issues is critical to the success of their overall businesses.

The ongoing changes to the timetable, with the implementation of programmes such as Thameslink and Crossrail, bind routes together more than ever. After that HS2 will follow, reinforcing the 'network' nature of the railway.

Our role also means we can engage beyond the rail industry and make a significant contribution to broader policy debates on the role of rail in a wider transport, land use planning and economic context.

2.2 Our operating model

Our operational model highlights our role at a number of stages in the planning, development, and allocation of capacity on the network:

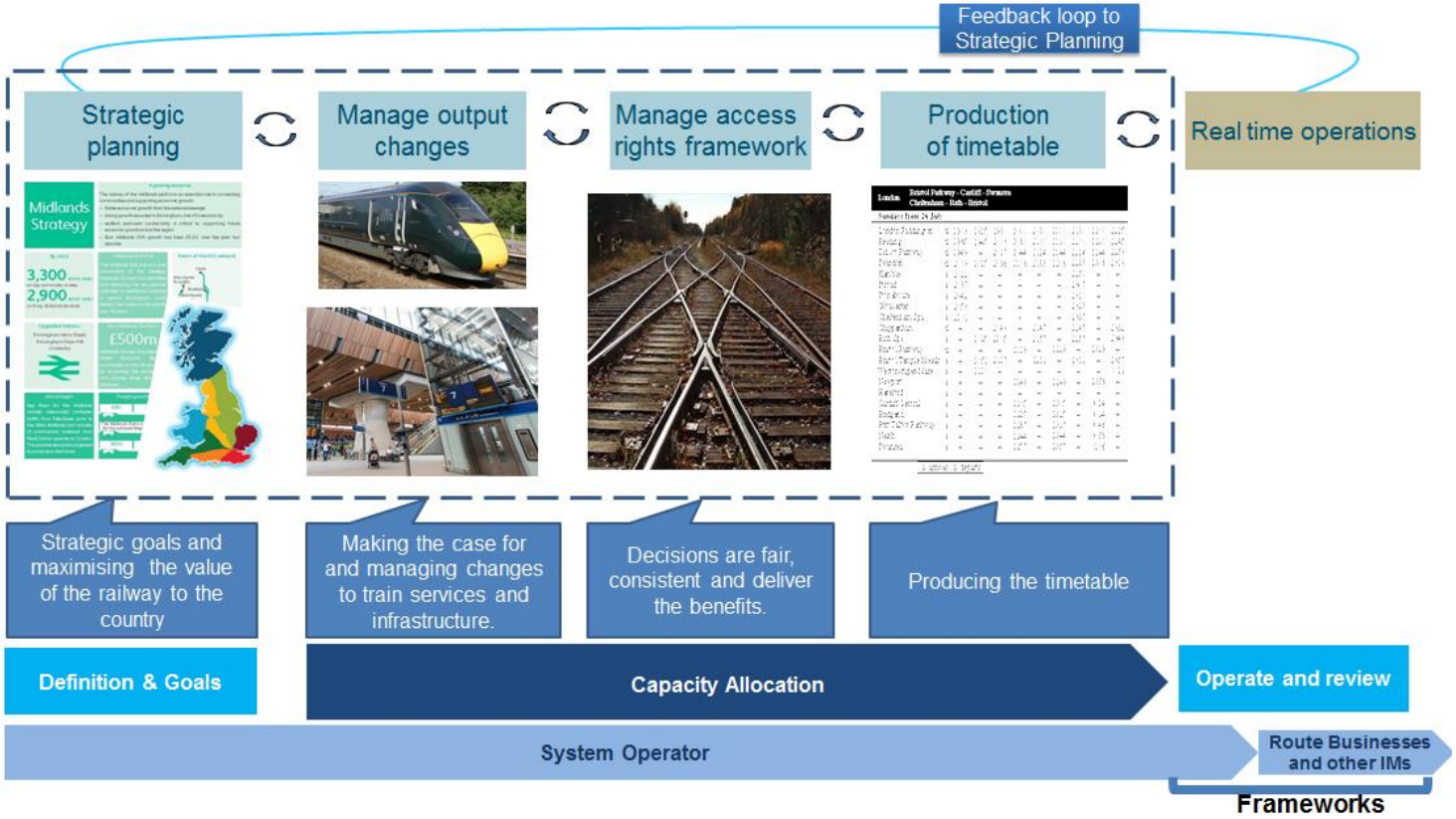
- Working with the rest of the industry we provide **advice** to governments and funders on the future development of the rail network and its potential to deliver for its customers and support economic growth and other key societal outcomes.

- This advice is supported and underpinned by **analysis** of the long term prospects of the markets rail serves, the development of long term strategies and plans to deliver desired outcomes, and the development of business cases to assess the potential costs and benefits to support the case for funding.

- The System Operator enables the delivery of new outputs to the railway system through **planning** of new train services, by providing **advice** to the franchising process and by **specifying** the service output requirements of any new infrastructure and broader system changes required to support output changes.

- The System Operator works with Network Rail route teams and train operators to **decide** the best allocation of capacity through operational timetables that meet the needs of train operators.

Figure 2.1 System Operator operating model



2.2.1 Strategic planning

The key purpose of our strategic planning is to provide **advice** to decision-makers, especially funders and franchising authorities. Our role in leading the industry long term planning means that we work with a wide range of funders and stakeholders to understand, articulate and inform their goals and understand where the railway can assist in achieving them.

We identify future demand based on an understanding of historic demand, the current market position and forecast trends in order to identify how the system can best meet these goals. Where more capacity (or a different way of using the existing capacity) is needed to meet that demand, we identify the best value ways of doing so.

We are able to consider different types of intervention to meet capacity and connectivity demands including:

- different timetable patterns;
- more trains;
- longer trains;
- infrastructure options (e.g. digitised signalling and control); or
- new physical infrastructure (e.g. grade separated junctions)

The case for any of these needs to be made and evaluated against other options and consider both transport benefits and the overall effect on the economy. Our approach allows investment cases to be considered from the perspectives of a variety of possible funders, recognising that many rail projects deliver wider economic, social and sustainability benefits. This is achieved by providing demand forecasting, business case appraisal, whole industry economics and station capacity analysis to support industry long term planning activities.

The strategy and planning teams also take a cross-funder and route view, which enables them to identify where there is actual or potential misalignment between governments or funders. We are also able to identify current and potential misalignments between diverse stakeholders' aspirations, collaborating to develop mutually satisfactory outcomes.

In CP5, the key output of our strategic planning process has been the delivery of Route Studies, providing a long term strategic view of how the railway needs to develop over a 30 year horizon to accommodate the predicted demands placed on it. These studies inform the overall enhancements pipeline across the network, based on choices and priorities set out by DfT and Scottish Ministers. They also provide the evidence base and opportunities for private sector funding and third party development and delivery.

2.2.2 Managing output changes

The System Operator enables the delivery of new outputs to the railway system through **planning** of new train services, by providing **advice** to the franchising process and by **specifying** the service output requirements of any new infrastructure and broader system changes required to support output changes.

- Franchising

We have a key role in advising both the franchising authority and bidders on the feasibility of different options for the use of future network capacity. An increasingly integrated team approach between the System Operator and the DfT franchise team is being developed to support this work, including the creation of professional franchise project managers within the System Operator team that can then be embedded within the DfT franchising teams.

As part of whole-industry planning in Scotland we will continue to work closely with Scottish Ministers to establish the correct operating model during CP6.

- Enhancements

Where capacity requirements are to be delivered using physical infrastructure we act as network client on behalf of the funder and industry, holding the project to account for delivering the agreed outputs within funding.

This includes defining the governance arrangements and tracking of funding and output commitments at the portfolio level, including management of the DfT Portfolio Board meetings, the management of change control processes with funders and the ORR, and the management of ring fenced funds. We are developing similar processes and supporting capabilities for Transport Scotland (TS) and other funders.

For example, we have developed jointly with DfT an Investment Decision Framework (IDF) through which we want to govern funding decisions for enhancements and would expect to agree a similar set of principles with other funders. The diagram below sets out the stages in the IDF for programmes that will be funded by DfT's Statement of Funds Available (SoFA).

Along with being accountable as a client for infrastructure enhancement projects and programmes, we are also the client for the Network Rail overall enhancement portfolio of works and provide overall leadership for the approach to portfolio management. This includes leading the definition of the enhancements pipeline and co-ordinating inputs into industry advice to funders, the periodic review process and the Network Rail business planning process.

Managing output changes is particularly important when investment projects can take several years between concept and final delivery, and investors need the certainty that benefits will be realised to support their commitments. Our end to end planning role allows us to make sure the benefits of investments are able to be realised in the future use of the network for passenger and freight services.

As projects are completed and new infrastructure is made available there is a need to carefully plan and execute the service change. We work collaboratively with train operators, funders, stakeholders, Route Businesses and neighbouring infrastructures to make sure that the benefits of infrastructure investment (for example, improved capacity) are realised in the timetable.

Supporting new services can include both small stretches of infrastructure and significant timetable redevelopment for changes such as for Thameslink and Crossrail. HS2 will add large amounts of new capacity and enable new choices for the network across Great Britain. Such large changes to the network require long term planning and for us to work with the Rolling Stock Owning Companies (ROSCOs), Owning Groups and the Rail Delivery Group (RDG) to input into the Rolling Stock Strategy and to integrate network development and reflect emerging needs.

Figure 2.2 Investment Decision Framework

**Projects will progress through this pipeline subject to an ongoing business case assessment and affordability review at each joint decision point with the funder(s).*

2.2.3 Managing the access rights framework

The System Operator facilitates Network Rail's **decisions** on whether to support an operator's application for access rights.

We undertake this work in line with the concept of making 'best use' of capacity throughout the network, reflecting the priorities of funders and operators within the overall framework while complying with licensing and statutory requirements.

This is managed within Network Rail by a framework that consists of Network Rail's Access Policy, its sale of access rights process, and the creation of the network-wide timetable. As System Operator we own and continue to develop this framework which informs Network Rail's decision on whether to support an operator's application for access rights to the ORR. The ORR makes the final capacity allocation decision taking into account its regulatory and wider legal duties. Our role is to provide information and analysis to the ORR to support it in its decision making.

Access rights need to carefully balance the needs of operators with the flexibility that optimises use of the network and creates the most effective and efficient timetable (using the industry agreed decision criteria). All this has to be done consistently with Network Rail's operating licence and in accordance with the industry's Network Code.

We also provide routes with the framework to manage very short term capacity allocation decisions (e.g. for significant disruption) and can advise on the overall priorities across the network when difficult network-wide decisions are required (e.g. on the allocation of limited critical resources).

A further benefit of having capacity allocation undertaken by a separate body within Network Rail, is that Route Businesses can engage in more collaborative models (such as alliances) and continue to comply with legislative requirements, operating transparently and openly.

Our work therefore supports greater engagement with local customers and stakeholders and the overall drive for devolution that exists not just in Network Rail, but in society more widely.

2.2.4 Production of the timetable

Timetable development is our most complex, resource demanding and time critical process. It involves **decisions** on how to accommodate requests for track access from over thirty operating companies each holding different contractual 'rights' in a manner which is consistent with the industry's Network Code.

The Network Code sets out the processes and timescales that inform the timetable development process, and provides criteria for decision making.

To develop a timetable there needs to be a detailed understanding of the capabilities of numerous types of rolling stock running over hundreds-of-thousands of assets and all the related interfaces with staff and passengers.

As the network gets busier this challenge is becoming even greater. Increasingly we will need to make more judgements on the trade-off between more trains, better journey times and system performance, as well as the priorities of different geographies.

When the base timetable is published it is transferred into the operational business to deliver as part of overall system operation. Timetables are continually changing and need to be amended to deal with short-term changes like engineering works, special events and specific operator needs.

The timetable processes are underpinned by the continual updating of timetable planning rules (TPRs) to reflect changed capacity and capability of the infrastructure and other system elements. Examples include when a line speed is increased to enable trains to run faster (and thus improve journey times), or when station usage increases and requires a lengthening of dwell times at platforms.

This means benefits of investments do not materialise until the building blocks of the timetable (the TPRs) are recalculated and the timetable is changed. Equally, poor performance can become built into the timetable if rules require review and are not updated. While programmes such as TRIP (timetable rules improvement programme) have delivered in CP5, the value of ongoing investment in building timetabling capability cannot be underestimated, and our operational model highlights this key step in the

delivery of benefit as an output of investment in the railway.

2.2.5 Scotland

Alongside delivery of the activities described throughout our operating model for the Scottish network, our accountability extends to providing a strategic integration role, ensuring that the rail network plays its full part in developing long term strategies and programmes that demonstrate value for money and support Scottish Ministers' priorities.

The High Level Output Specification set out by Scottish Ministers identifies a number of requirements, and we will align our activities and measurements for the System Operator in Scotland with these priorities.

Our approach to doing so is outlined in detail in Section 3a.

2.2.6 New lines

A key area of accountability is our role as the internal client for new lines such as High Speed 2 (HS2). We own key relationship with the funder and ORR, managing change control against the high level outputs, funding requirements and regulatory obligations of Network Rail.

We are accountable for agreeing the high level outputs and securing the funding required for the projects associated with HS2.

The scale and complexity of HS2 requires a different approach than for any other new railway infrastructure ever delivered in Britain. In phases 1 (2026) and 2a (2027), the majority of services proposed are expected to run on to the conventional network from the high speed line. In phase 2b (2033) around half of the high speed services will continue to do so. This demonstrates how the new line will need to be well integrated and become part of the wider network. As a result, there are multiple interfaces between the new high speed line and the conventional railway that need to be managed, including:

- physical interventions – changes to the conventional network to make way for or facilitate the construction and operation of the new line;
- system interfaces – there are a number of network level system interfaces which require identification and management, including train control, traffic management and communications;
- operational changes – including the creation of a network-wide timetable incorporating HS2 trains and required revisions to operational practices to accommodate them; and
- commercial arrangements – it will be necessary to put in place commercial agreements covering a wide spectrum of topics including track access, compensation and land pooling.

The sponsorship and delivery of the on network works (ONWs) for phase 1 recently transitioned from the System Operator to Route Businesses LNW, after Royal Assent and that element of the scheme moving into delivery.

We are also accountable for effectively integrating both phases of HS2 with the existing network in order to maximise the economic benefits and the opportunities presented by HS2 to railway users and stakeholders.

2.2.7 Key customer deliverables in Control Period 6

Set out below are some of the key customer deliverables for the System Operator during CP6 aligned to the key activities as described in our operating model, described earlier in this section.

Figure 2.3 Key customer deliverables in CP6

	Strategic planning Advising on long term priorities	Manage output changes Specifying change and advising on franchising	Manage access rights framework Advising on allocation of access rights	Production of timetable Deciding on the best timetable
2019	We will work with Government, funders and stakeholders to develop longer term strategies for the network, and provide advice to funders on investment priorities based on our analysis. Activities include: - Development of strategic plans for the network based on an annually agreed plan to inform the enhancement pipeline through modular strategic plans to support the needs of governments, SNTBs, City Regions, and other funders. - Publication of an enhancement pipeline identifying options for enhancement of train services to meet funders needs. - Support to franchise authorities to develop deliverable franchise propositions that meet their aspirations. - Early stage development of service enhancements to support the decisions by funders to invest in the network including development of business cases	Great Western ITT or equivalent for Direct Award East Coast (TBC) East Midlands ESG	The System Operator is responsible for setting the framework within which the Sale of Access Rights process is managed within Network Rail; this is being reviewed as part of our End-to-End planning ahead of the beginning of CP6. While specific outputs are customer driven in response to changes in market demand for capacity, our input into considerations will include improved capacity analysis and performance modelling which will be available in the first year of CP6. Additional policies to support the process will be developed as necessary e.g. in response to congested infrastructure.	North of England, TransPennine Express & Northern franchise commitments & new rolling stock - additional train services Greater Anglia timetable recast & new rolling stock. - additional train services and improved journey times Scotland - rolling programme of electrification - improved journey times Virgin Trains East Coast, TransPennine Express, East Midlands Trains - franchise commitments and new rolling stock. Crossrail full service timetable and rolling stock - cross London connectivity, additional train services
2020		Thameslink, Southern & GN ITTs, Chiltern ITT East Coast (TBC) East Coast ESG		Midland Main Line 6th long distance hourly service
2021		Scotrail (or 2024)		East Coast Mainline 2021 timetable Wales & Borders franchise commitments and any associated rolling stock changes.
2022		TransPennine Express ITT Caledonian Sleeper (or 2030)		East West Western Section - new line, new timetable - increased capacity and new connections across the network
2023		South Western ITT		Changes anticipated arising from the delivery of enhancements not yet committed for delivery
2024		Northern ITT East Anglia ITT		

Timetable changes arising from DfT funded infrastructure enhancements will be incorporated as schemes pass the Final Investment Decision point.
We will be working with funders on a number of major programmes in CP6 for which specific milestone dates are not shown above. This includes the development of High Speed 2, Crossrail 2, East West Rail and the Northern Powerhouse programmes.

2.2.8 Safety throughout our operating model

Safety is at the heart of everything that we do. As well as supporting the health, safety and wellbeing of our team, as System Operator we make a meaningful contribution to whole railway system safety throughout our operating model. We recognise the vital contribution to the safety of the railway system by embedding safety considerations at the very beginning of the strategic planning process and throughout our project development activity, informed by station capacity analysis to consider the movements of passengers in and around stations. We influence system safety through the frameworks and support we provide Route Businesses in the implementation of timetable change, as well as through the development of a safe and robust network-wide timetable. Figure 2.4 illustrates a number of ways in which we, as System Operator contribute to system safety.

Figure 2.4 System Operator and system safety

2.3 Our position within Network Rail

We are a distinct, but connected part of Network Rail and provide a range of services for Route Businesses, train operators and funders while delivering our own accountabilities including system benefits as a whole to Great Britain.

We support the delivery by routes of today's railway by:

- building a resilient network timetable;
- supporting preparations for operational delivery (e.g. timetable change assurance activity); and
- managing frameworks for devolved activities that are carried out by Route Business teams (e.g. engineering access planning)

We launched the new System Operator function in May 2017. This re-organisation has been a cornerstone of our programme to create a System Operator that is fit for the future, arising from changes to the railway environment. It is the base organisation now reflected in and improved by this plan.

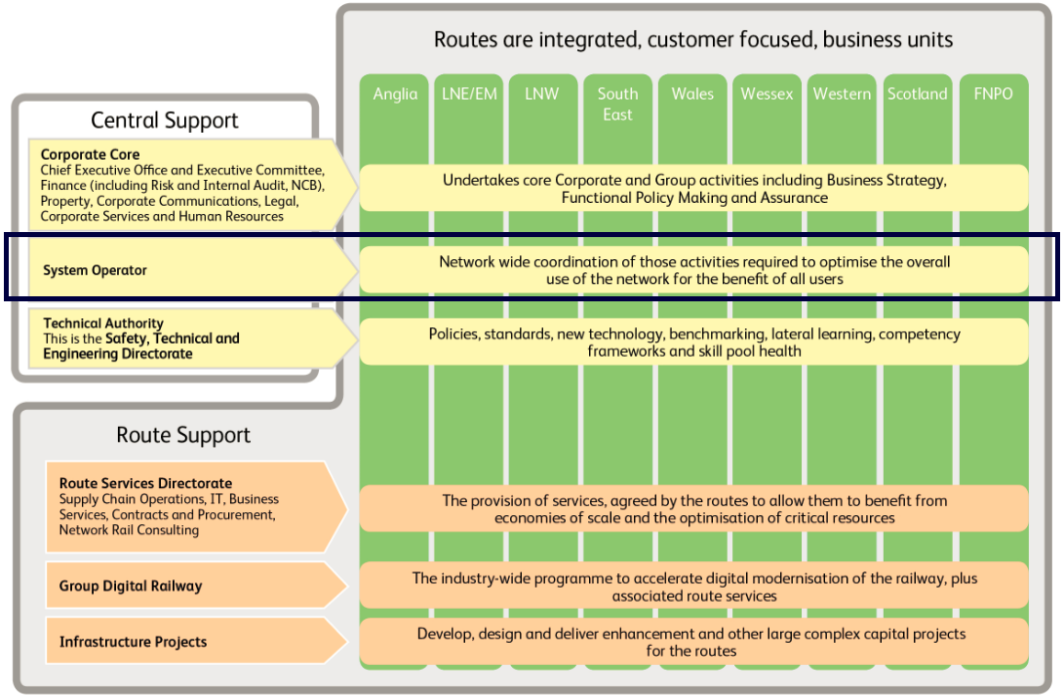
Over the last few years, there has been increasing devolution of Network Rail, as well as diversification of funding and specification. This has made our network wide role even more important, and structural changes within our organisation were necessary to meet the needs of our customers.

2.3.1 How we are organised

As part of our re-organisation of the function in 2017, the function has been strengthened to provide:

- a director role to engage with governments and each major funder, and a Principal Strategic Planner to focus on each route;
- teams that are sized to reflect an agreed client model which ensures that a client oversees the planning and delivery of planning outputs throughout the end to end capacity process;
- a core team which provides leadership for the function's key programmes;
- a small team of highly qualified policy experts; and
- a function in a state of overall readiness to better deliver for our customers in CP6.

Figure 2.5 Illustration of NR functions in relation to each other



The Managing Director – System Operator leads a team comprising of:

- Strategy and Planning teams (Scotland, North, South and Wales & Western);
- HS2 Integration;
- Capacity Planning; and
- Policy and Programmes.

Figure 2.6 System Operator leadership team

2.3.2 Strategy and planning teams

The strategy and planning team consists of Directors of Strategy and Planning; North, South, Wales & Western and Scotland. Their roles have been developed to respond to changes in the funding landscape and so better align with a greater number of governments, devolved funders and other customers.

The organisation is designed around delivery of the key client roles and development activities, with Strategic Planners focussed on long term planning and client roles and Development Managers focussed on development activity: the numbers of these roles are fairly evenly split.

2.3.3 HS2 integration

Our internal client role is accountable for the integration of HS2 with the wider network, making sure the whole is greater than the sum of its parts, and that capacity use is planned most effectively at a network level.

2.3.4 Capacity planning

The organisation is structured to provide key activities including:

- acting as a Professional Head of Capacity Planning to provide strategic focus and a guiding mind for planning activities, as well as ownership of the Network Code Part D within Network Rail;
- capability and capacity analysis to support investment, service level and franchise decisions in advance of the working timetable development process;
- development and delivery of the working timetable process, including leadership of industry steering groups to support timetable change, management of the timetable planning rules and delivery of permanent alteration for emerging operator requirements;
- the weekly adjustment of the timetable for engineering work and short term operator requirements; and
- network-wide frameworks for access planning.

2.3.5 Policy and programmes

This team provides a range of central (non-geographic) cross-functional activities and also provides support to the geographically based teams in specific disciplines. The team is structured to provide;

- thought leadership and policy development in key policy areas affecting the System Operator;
- analysis and forecasting to support the industry long term planning processes;
- client portfolio services providing the overall client oversight of the investment portfolio; and
- portfolio and programme leadership of the function's key programmes and projects.

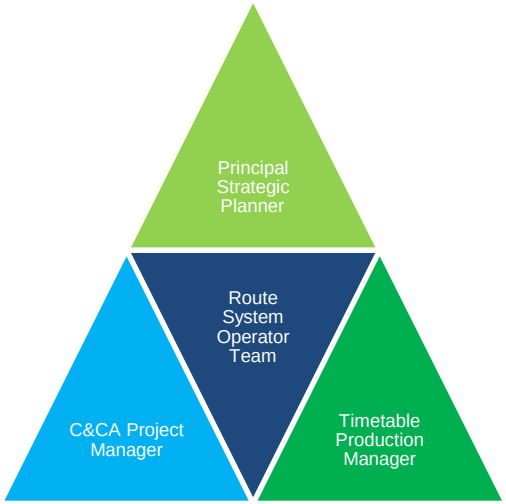
2.4 The route / System Operator relationship

While we are distinct from the Route Businesses, to deliver our activities in a transparent and impartial manner for our wider customers we also draw strength and expertise from working closely with the Route Businesses across the network.

The concept of the Route System Operator operating model has been developed to address the need for an effective working relationship. There are three key roles that enable a joined up approach with routes. These are:

- the Principal Strategic Planner (PSP) who often sits on the Route Managing Director's leadership team and is accountable for leading the strategic planning activities on a route;
- the Timetable Production Manager who is accountable for the timetabling activity on a route; and
- the Capacity & Capability Analysis (C&CA) Project Manager who is accountable for providing capacity and capability analysis to inform the strategic planning, project development and timetable production processes.

Figure 2.7 The Route System Operator operating model



The relationship between these roles and the routes is essential for constructive dialogue that supports and enables the achievement of each parties overall objectives.

We benefit from a greater understanding of the operation of each part of the network, local experience of train performance issues, and understanding of the routes' requirements for engineering access. In return the routes benefit from ensuring that practical operational issues are taken into consideration in our capacity planning, and they have the wider strategic inputs that they need in their overall decision making.

The System Operator also works with its route colleagues to support delivery of small scale schemes commonly funded by either train operators or local beneficiaries such as developers and Local Authorities.

2.5 System Operator vs system operation

There is an important difference between the role of a System Operator and the broader concept of system operation.

System operation exists, in differing forms across network industries although terminologies and roles vary. For example, in electricity and gas there is a distinct activity which sits between the energy generators and the local businesses and consumers, operating the distribution system in a literal sense and managing supply and demand, both real time and long term.

The industry structure in railways drives a different model; there are multiple players involved in operating and controlling the overall system in different layers. As System Operator we manage access to the network through the allocation of capacity in the timetable in a manner that is consistent with the industry's Network Code.

Real time operation of the network sits in the Route Businesses and with the other infrastructure managers. The *organisational* boundary in Network Rail lies after the creation of the timetable which underpins the routes' day-to-day operation and in the role of client for physical enhancements to the network that are implemented for the route based organisations.

Parties other than Network Rail play a role in overall system operation, for example, by specifying the nature and level of services in franchises, by making final decisions on which investment choices to progress, or by the ORR in directing access agreements.

We have a vital role in informing, on behalf of the whole system, the decisions taken by others using the knowledge and analytical capability that we have.

3. Customers

Our customers include all funders of the railway, rail infrastructure businesses, and operators running trains on the network - all of whom depend on us for the coordination and provision of capacity.

As this is a significant number of customers, in this plan we have categorised funders as national governments, sub-national transport bodies (SNTBs), combined authorities, local authorities, and local enterprise partnerships (LEPs). Funders are also key customers for franchising support, our client role for enhancements, and choices for investment supported by socio-economic and capacity analysis.

Our operating customers include the franchised and open access operators (both passenger and freight) as well as potential operators, and we directly engage them throughout the processes outlined in our operational model.

Route Businesses and other infrastructure managers are also considered to be direct customers, benefitting from analytical work supporting the sale of access rights, the network change process and creation of the network-wide timetable.

We also have a broad base of stakeholders whose input and opinion is sought at various stages of our strategic planning processes and infrastructure enhancement development process. Many of these are acting on behalf of the end user and wider economic and social priorities, and may fund specific projects and programmes.. This encompasses user groups (e.g. Transport Focus and Rail Freight Operators' Association (RFOA), LEPs, Regional Transport Partnerships, and City Deals).

The geography of the routes, the customers and the Route System Operator teams that provide focus on them are shown in more detail in Appendix A.

There are two strands to engagement with our customers: business as usual engagement and engagement carried out specifically to inform this plan.

3.1 Customers and stakeholders – ongoing engagement

The way that the System Operator engages customers and funders is often primarily aligned with the routes, so that there is a unified approach and consistency of message, and this is supported by overarching network-wide engagement.

The System Operator engages with customers, routes and stakeholders using a number of regular meetings, including the following:

- Client Group;
- HS2 Sponsor Boards;
- Investment Panels;
- Operational Planning Practitioner Group;
- Operational Planning Strategy Group;
- Operator Account Meetings;
- Route Executive;
- Route Strategic Planning Group;
- Route Monthly Business Review;
- Route Investment Review Groups;
- Planning Oversight Group;
- DfT Portfolio Board;
- Programme Boards;
- Scottish Rail Industry Planning Advisory Group;
- Strategic Freight Network Steering Group;
- Transport Board;
- Wider Stakeholder events (e.g. Rail Industry Planning Conference).

An overview of how such engagement informs the activity outlined within our operational model is provided in Appendix A. We are in the process of implementing a governance framework, outlined in section 4.4, to encourage and demonstrate transparency and accountability.

3.2 Customer requirements – SBP engagement

In addition to the business as usual engagement described above, we have welcomed the opportunity to engage with our customers and stakeholders in the development of our plan.

Our consultation began in Spring 2017, with engagement focussing on:

- the launch of the System Operator function;
- providing clarity of roles and accountabilities of our organisation; and
- gaining views of our customers and stakeholders of their current and future priorities.

An industry workshop was held in May 2017, to which train operators, national user groups and the ORR were invited. The workshop formed an important step in the development of our plans, inviting customers and stakeholders to:

- outline their priorities of the System Operator over a 5-7 year time frame;
- identify how we can assist in the delivery of these priorities; and
- consider how our delivery could be measured in a transparent and meaningful way.

The outputs of this event informed the early development of our plan. We continued engagement in conjunction with the Route Businesses consultations, and throughout our 'business as usual' engagement in order to streamline the process for our customers.

Specific System Operator related engagement continued through the RDG led System Operator Working Group, informing the development of our functional scorecard and of our governance framework, both described in Chapter 4 of our plan.

In December 2017 we shared our plan in full with the industry for review and feedback, and commenced engagement with train operating and Route Business customers to inform the development of bespoke scorecards and measures intended to measure the priorities of our customers at a local level.

The overarching theme of our engagement has been, and will continue to be, to understand how we can support our customer and stakeholder objectives while planning the network in an holistic manner and supporting the economic growth of Great Britain.

The views of our customers and stakeholders have been central to the development of our plans, and the contributions we have received have been as diverse as our stakeholder base.

The output of our engagement to date is described within Appendix C and a stakeholder engagement log forms a supporting document to this System Operator SBP. A summary of the key messages is provided in Table 3.1.

A further industry workshop is planned in February 2018 providing further opportunity for the constructive dialogue held with industry colleagues in May 2017. We continue to engage with our customers, both through our regular engagement activities and also through bilateral discussions to directly inform the ongoing development of our plan.

Table 3.1 – Customer engagement and key messages

	Stakeholder Group	What do they need of the System Operator?	Related Priority Table 3.2
Customers	Freight & Train Operating Companies Owning Groups	Realising aspirations in the timetable, including benefits of enhancements.	B & E
		Development of prioritised options to deliver additional capacity and capability on the network.	C
		A resilient timetable with capacity available where demand exists for additional services.	E
		Effective and efficient timetabling processes, able to react at short notice.	E
		Greater transparency in System Operator processes.	G
		Proactively identify additional and available capacity in the system.	C & E
		Identify conflicts in industry parties' priorities and commitments.	A, C & G
		Consistent end to end planning across route boundaries.	B & C
		Balance between freight and passenger needs when planning and developing solutions.	C, E & G
	Funders & Specifiers	Provision of choices available to support the development of policies and decisions.	C
		Delivery of enhancements on time, on portfolio budget and in an integrated manner.	B, F & I
		Delivery of the Scottish Government's Key Strategic Outcomes.	B, C, E & F
		Reflect devolved priorities in how we plan the network.	B & C
		Provision of advice and analysis in support of the franchising process.	A & E
	Route Businesses	A robust and resilient timetable that satisfies customer needs.	E
		Consistent delivery of the informed traveller process.	E
		A robust and transparent enhancements pipeline, including supported third party investment.	B & C
		Clear accountabilities, tools and guidance for System Operator processes.	G
Stakeholders	Local Authorities & Partnerships	Consideration of how local priorities can be integrated with the strategy for the wider network.	C
		Be more responsive and able to model different iterations of the timetable to inform decisions.	C & E
	User Groups & Wider Stakeholders	Strong framework to allow our customers to deliver for passengers and freight users.	G
		Develop solutions to meet growth in demand and requirements for improved connectivity.	B & C
		Support the industry in providing value for money.	All
		Improved passenger satisfaction through provision of more seats and improved punctuality.	All

3.3 Developing our plans

We have collated all of our customer inputs and feedback, and have categorised it into a number of broad themes.

Table 3.2 – Priorities and plans

Priority	What are our plans?	
	By the end of CP5	In CP6
A Providing effective capacity advice-for franchises and for track access decisions	Establishing an approach with franchise specifiers to enable the System Operator to play a stronger role in the franchising process. Shaping our approach to a wider scope of analytical services. Initial strengthening of our analytical capability driving cost efficiency across Network Rail through reduced use of consultants.	An embedded System Operator point of contact within the franchising team enabling greater alignment in industry outputs and incentives, supported by strengthened analytical capability. Supporting the Route single point of contact for each franchise working with franchise bidders throughout bid development drawing on expertise throughout the System Operator organisation. Delivering a wider analytical scope including supporting public funded projects through early stage development, and providing analytical support for ORR track access decisions.
B End to end process from strategic intent to timetable delivery	Agreed scope and timescales for workstreams to improve the end-to-end planning process, aligned with other planned improvement initiatives.	Delivering improvements to processes and outputs across the System Operator to provide an effective, efficient and transparent end-to-end planning process. Clear benefit management throughout the process, with associated change control and governance.
C Continuous Modular Strategic Planning (CMSP)	Change of approach to delivering strategic planning, with lessons learned approaches established and stakeholders contributing to the development of the annual plan.	Delivering all strategic planning activity through a new, more agile approach, with an annual programme established to meet the needs of stakeholders. Both strategic planning and development activity considering socio-economic impacts and efficiency opportunities, as well as the needs of funders and diverse local priorities,
D Greater involvement in franchising	Agreed approach and role for the System Operator in the franchising process with the DfT, and with TS. Lessons learned from franchise processes captured.	Dedicated resource providing a programme management approach to the System Operator's engagement in the franchising process, providing greater alignment in industry incentives and outcomes through franchising

Priority	What are our plans?	
	By the end of CP5	In CP6
E Timetabling capability and technology	Benefits of TRIP realised in the timetable, and major timetable changes supporting Thameslink and Cross Rail delivered within the existing industry process. By the end of CP5 the Offering Rail Better Information Services programme is committed to deliver a corporate infrastructure capability model that will benefit the Train Planning System. Event Steering Group process improvement opportunities identified.	Improvement programmes focussed on improving the common industry data, built on an adopted corporate infrastructure capability model, in order to support the timetable process and in introduction of greater granularity, accuracy, automation and modelling in the timetabling process Dedicated capacity analysis team seeking to identify capacity opportunities within the timetable (Capacity Hunters). Event Steering Group (ESG) processes improved and providing greater linkage with the end-to-end planning process, Operator Bid content and the final version of the Working Timetable.
F People capability	Continued development of our Operational Planning Assistant programme, including focus on retention. Workstreams focussing on our capability as part of our role as the client, and project development capability, supported by Network Rail leadership programmes.	Professional Head roles established for Access and Timetable Planning & Strategic Planning, sponsoring competency frameworks and development initiatives. Ongoing management and development of our talent pool and performance including professional skills and leadership development. Constant review of our staff retention policies and their associated effectiveness at retaining best and most experienced planners.
G Frameworks & transparency	Clarity provided in the Sale of Access Rights process, and a programme plan established to develop frameworks during CP6.	Developed and implemented frameworks and processes which provide clarity of accountabilities and transparency in the System Operator's approach. Assurance activity undertaken in support of these frameworks.
H Continuous Improvement	Continuous Improvement strategies established for each area of the System Operator team, with individuals across the team trained in leadership and practitioner approaches to continuous improvement.	A Continuous Improvement culture, with our teams delivering efficiencies in our approach to ensure that we are able to meet our growing customer needs without a growing resource base as well as improving the quality of our outputs.
I Scorecard & governance	A final year scorecard which provides a step towards the CP6 measurement system. Scorecards and measures agreed at local level, and improved use of key performance indicators throughout the business. Governance framework established, with key roles appointed and running in parallel with Network Rail's existing governance framework.	A suite of scorecards demonstrating the System Operator's performance throughout the operating model at various different levels. Measures clearly articulate and demonstrate our delivery of our customers' needs. An established governance framework providing greater accountability and transparency of the System Operator's approach.

3.4 Potential future changes

In November 2017 the DfT published “Connecting people: a strategic vision for rail”. We continue to discuss with DfT the implications of this strategy on our business plan.

The proposals set out in this strategy could have a material impact on the System Operator’s plans;

- We will need to support the DfT with its proposed changes to the franchise map and the development of different working arrangements between Network Rail and train operators;
- We will work with Route Businesses and industry partners to identify opportunities to expand the network that benefit housing and economic growth, and working with potential third party beneficiaries and investors on these opportunities to attract additional funding and financing; and
- We will need to provide advice to DfT to support its commitment to expand the network, advising on the key capacity challenges across the network, identifying priorities for the enhancements pipeline.

The DfT is currently accountable for system integration activity for major programme specification and implementation. This is an area in which we could take an increasing role in CP6; this is reflected in the Scottish HLOS, and our capability in Scotland is designed to create the ability and assurance that this process is followed through and we will work with Transport Scotland to take the process forward effectively

Overall we expect many elements of our customer and stakeholder base are unlikely to alter significantly through CP6, noting that a wider and more diverse customer base is anticipated in the form of third party funders, infrastructure managers, potential Access Option holders, and additional passenger services provided by Open Access operators.

In addition to the impact that this will have on our stakeholder engagement strategies, the organisational structure or approach to engagement may need to be revised to take into account the following possible changes:

- Increasingly organised local stakeholder groups, either through the creation of formal organisations or informal groups comprising of stakeholders with similar interests. An example could be in East Anglia, where the Great Eastern Main Line and West Anglia Main Line task forces could align with the creation of an East Anglian sub-national transport body, also involving LEPs.
- Sub-national transport bodies are likely to gain greater powers for specification and funding of rail services and for enhancements.
- Revision to franchise boundaries – while we are orientated around the route structure, changes in franchise accountabilities could cause the route structure to be reviewed, or may also create a need to group and coordinate our activity in a different way.
- Alliances or similar between TOCs and routes – increasing or re-shaping organisational alignment, particularly contractual alignment, could further strengthen the requirements for the System Operator.
- There is likely to be increased onus on third party engagement for investment.
- There will be increased emphasis on HS2 preparations and integration with Phase1, Phase 2a and Phase 2b activities and powers expected to be obtained for the construction of HS2 Phase 2.
- There could be significant change in CP6 in terms of the shape and possible structure of the network in Wales, as the procurement of the Wales & Borders franchise has an option for an Infrastructure Concession.
- Potential developments of new ways of working in Wales involving the System Operator, Welsh Government, Transport for Wales and the Wales route.
- There will be changes in the way the capacity of the railway is planned in the Western route with the introduction of new Crossrail services between Shenfield, Abbey Wood, London and Reading

In order to adapt appropriately to changes that arise in future, our role must be clearly defined and well understood to aid clear and transparent working with our customers and funders. We also need to retain the flexibility to refine what we do and how we do it as the views of our customers mature and change over time.

Until the terms of Brexit are clear, including any transitional period or future agreements to align with EU legislation in any relevant sectors, we will continue to plan to comply with existing and emerging legal requirements. In any event, the UK has incorporated many relevant EU requirements into UK regulations or is likely to do so under the UK's planned withdrawal legislation at the point of exit.

There is an opportunity with the formal establishment of the System Operator to deliver a step change in the quality of analysis to support decisions. The System Operator could increasingly become the trusted provider of analysis to inform decisions, in particular those taken by public sector bodies relating to the sale of access rights, infrastructure enhancements and franchising.

Our plan includes funding to extend the scope of analysis undertaken by the System Operator, especially around the early stages of enhancement development where the potential benefits of an integrated, whole-system view are greatest. As our role evolves over CP6 we will explore with customers and funders the potential for further extension of our analytical role, including playing a greater role in support of franchising.

There are areas in which the System Operator could make more decisions on behalf of the industry, such as specification of network wide key characteristics for success in franchises, infrastructure capabilities and rolling stock strategy, making the most difficult allocation decisions and others. These warrant more discussion in the future as the industry matures.

Finally, some stakeholders have argued for a System Operator fully separated from Network Rail in a model more like that seen in other industries. We are clear however that the railway's System Operator has a need to be, and will gain benefit from being, connected to the operational railway and the pool of talent available across Network Rail. This will prevent the System Operator becoming a body devoid of practical and contextual understanding leading to poor decision making.

3a. Scotland

3a.1 Introduction

Scottish Ministers have been responsible for specifying and funding the rail infrastructure in Scotland since 2006. They fund and award the ScotRail and Caledonian Sleeper franchises, and set the general strategic and policy framework for railways in Scotland in the context of wider government objectives.

The role of the System Operator, set out in Chapter 2, extends across the whole of Great Britain. In this chapter we describe how the System Operator and our activities will deliver for the priorities of Scotland by:

- focusing on aligning industry objectives and outcomes;
- delivering competitive and affordable outcomes; and
- building on the successes that the rail industry has delivered for Scottish passenger and freight users during CP5.

3a.2 Customers

Transport Scotland is our principal funder. We also work with the seven Regional Transport Partnerships, local authorities and the current and emerging City Deals to identify how rail and transport can contribute to their priorities. We also work with user groups and wider stakeholders, such as Transport Focus.

The majority of passenger services in Scotland are operated by Abellio ScotRail, in a deep alliance with Network Rail's Route Business Scotland. Cross-border services are provided by a number of DfT franchises: Virgin Trains West Coast, Cross Country, TransPennine Express and Virgin Trains East Coast, as well as Caledonian Sleepers. Freight and future open access passenger operators are also represented in Scotland.

We have engaged in developing the role of the System Operator and our Strategic Business Plan through structured activity, including bilateral discussions with key stakeholders, and the framework of engagement outlined in Section 3.2. The Strategy & Planning Director (Scotland) continues to engage and ensure that Scotland's requirements are integrated into the overall System Operator organisation, outputs and measures.

In addition to specific engagement with customers, ongoing visibility of System Operator development is being achieved through:

- The Scottish Strategic Planning Group (SSPG), established to provide support to RDG Planning Oversight Group and to ensure whole-industry input to strategic planning;
- The Route Investment Review Group (RIRG), which provides industry governance of current and future investment;
- Emerging proposals to formalise and align the process for developing and delivering programmes and projects in partnership with government.

Scottish Ministers set out their requirements for Scotland's rail network in the High Level Output Specification (HLOS) published in July 2017. Although the Statement of Funds Available (SoFA) has not been published at the time of writing, we have developed our business plan transparently and to reflect the Scottish Minister's priorities. A Rail Capital Investment Strategy is expected to be published imminently.

The HLOS sets out priorities within the published National Transport Strategy:

- Improved journey times and connections
- Reduced emissions
- Improved quality, accessibility and affordability.

These priorities require improved services, improved capacity, improved value, more effective integration and support for increasing inclusive economic growth.

The HLOS also requires:

- The creation of an expert whole-rail-system project client and sponsor capability based in Scotland, to control all stages of investment project development and delivery
- Dedicated resources for timetabling, specific to the Scottish network, which should be familiar in detail with its geographical, market and operating characteristics, using processes and priorities fully aligned with the strategic priorities.

Within the whole-system client role, the HLOS addresses the need for wider strategies around depots and stabling, stations and support for rail freight growth and faster journey times for freight in Scotland.

Within the HLOS there are specific outputs specified, including:

- the development of a Scottish Gauging Strategy, the maintenance of the capability of the network for traffic at the same level as at the end of CP5;
- the normal availability of at least one cross-border route for passenger and freight operators with journey times as specified in franchise agreements;
- the achievement of 92.5% Public Performance Measure for ScotRail and support for sustainability and tourism.

Finally, Scottish Ministers have expressed a key priority in achieving improved journey times, with measurements and targets aligned with those of the ScotRail franchise.

3a.3 Outputs

To ensure that the activities of the System Operator are aligned with Scottish Ministers' priorities, we are developing a scorecard for Scotland that will feature a range of measures designed to reflect the System Operator's activity in delivering the outcomes and priorities for Scotland.

These measures are being developed to ensure alignment with the Capital Investment Strategy milestones and the effective delivery of the whole-industry client role. The Scotland scorecard will also reflect wider customer requirements, including those of the train operators who operate in Scotland.

A specific measure relating to Transport Scotland's priorities will be included within the System Operator functional scorecard. The activities that make up this measure will be agreed annually with Transport Scotland.

We recognise that the delivery of the journey time improvement will be a joint responsibility of Route Business Scotland and the System Operator and we will deliver back-to-back metrics that ensure clarity both of delivery and accountability. Similar activity will take place with the Freight and National Passenger Operator team to ensure that Network Rail is focused on delivering freight growth and exploring the opportunities for faster freight journeys.

3a.4 Activities

The System Operator organisation is designed to respond to the requirements and challenges set out in the HLOS. As set out in Chapter 2, our responsibilities extend across the whole of the network, and the priorities of Scottish Ministers must be integrated to ensure effective delivery.

The requirement for a whole-rail-system client role is recognised. Our plan is based on how we discharge this, maintaining industry client responsibility from project inception to close-out; with a clear accountability for ensuring that benefits are defined and delivered.

We are already focused on journey time improvements, working with operators to identify opportunities. This will be aligned with the Capacity Planning scorecard components for Scotland, ensuring that there is clarity and understanding of the requirements that reflect rail's requirement to be competitive for passengers and freight users to achieve Ministers' requirements for modal shift.

We will set out a programme of Strategic Planning activity that is aligned with choices for funders and stakeholders, reflecting opportunities around rolling stock, depots and stabling and train service specification. This will be informed by the Capital Investment Strategy, as well as the potential for

growth in cross-border traffic that is provided by future High Speed services and additional capacity.

Effective partnerships within the industry and beyond will assist in achieving strategic outcomes that are affordable. Before or during CP6 we anticipate that we will be able to align processes with Transport Scotland, and review industry structures to support an integrated strategic planning process that is both simple and transparent, in the context of clear governance and accountability.

There will be a number of franchise competitions impacting on Scotland, in addition to the choices for the next ScotRail operator, during CP6. We will support and resource accordingly, as well as recognising that cross-border passenger and freight services require integrated thinking, building on already-existing activity.

Based in Scotland, the Strategy & Planning Director (Scotland) will be the focus for these activities. Drawing on the resources available across the System Operator, this provides assurance that Scottish priorities will be focused on, while ensuring that expertise in capacity planning, policy and analysis is available to align with current and future requirements. Being able to draw on wider industry resources supports efficient and aligned delivery, while the scorecard will monitor progress for funders and customers.

Further activity plans are set out in Chapter 7, providing more detail on how the System Operator is responding to the requirements for the future of the railway network, which will be applied in Scotland as appropriate. Structured continuous improvement and lessons learned from our activity in Scotland will be shared across the System Operator as we develop best practice.

Within Scotland, plans under development for CP6, funded through the CP5 funding settlement, are likely to progress in CP6 through to authority to deliver. As the Scottish Government completes its Capital Investment Strategy and its review of the National Transport Strategy, we will need to consider how best to deliver the required whole industry optimised approach to deliver government's requirements, addressing a range of opportunities around service specification, franchising, rolling stock and depots and stabling.

In CP6 we will provide strong client and sponsor capability, based in Scotland, to support the Route Business and its suppliers in securing the right outcomes.

In ensuring that this is translated into effective delivery of faster, higher quality services, the Capacity Planning team, both through the Route System Operator and ongoing development, will provide an expert resource with incentives aligned to both the HLOS outcomes and those that support both Route Business and System Operator contributions to the network.

Our commercial focus, set out in Chapter 9, will be consistent with both the Scottish HLOS and the wider objectives of Network Rail. The same challenges exist for Scotland as they do across the network, and our ongoing management of both System Operator outputs and activity will reflect this, building on a flexible, whole-system source of expertise that works alongside Transport Scotland and the wider industry to achieve the best railway system for Scottish passengers and freight users.

3a.5 People

Chapter 6 sets out our people strategy. The System Operator fit for the future (SOfff) programme set out how we increase resource and capability to respond to our developing role. In creating a Director-level post to lead the System Operator activity in Scotland, we have recognised the importance of the Scottish relationships.

The Route System Operator structure is already embedded in Scotland, and we will seek to further develop and exploit the opportunities for synergy.

Our SBP builds on our re-organisation of May 2017, and reflects the requirement for a whole-industry client role in Scotland. A higher level of capability and resourcing is required, and it is anticipated that this will be in place for the start of CP6.

Resourcing for Capacity Planning is planned to meet the current and anticipated future needs. This includes a Timetable Production Manager role focussing on

Scotland, with appropriate resources to deliver the timetabling processes for Scotland. We operate a route familiarisation training programme to build knowledge of the Scottish network. We will include continuous capability reviews, and engage with Transport Scotland and customers to ensure that the outcomes specified are delivered.

In recognising the central role that the System Operator function plays, we also need to ensure that there is both career progression and development available to people in the team.

We will be integrated with the wider capability development activity, reflecting both the need to integrate Scottish priorities within the teams dealing directly with Scotland's railway, and for wider awareness of the requirements of Scotland across both System Operator and the industry more generally.

3a.6 Expenditure

	CP6 Year					CP6 total
	19/20	20/21	21/22	22/23	23/24	
Scotland Opex Cost (£m)	5.0	5.0	5.1	5.2	5.0	**25.3**
Scotland Capex Cost (£m)	0.8	1.3	2.2	1.4	0.6	**6.3**
Basis for allocation to Route Business Scotland	Headcount supporting Scotland teams, and central teams/capex split by route miles					
Activity	**Operational Expenditure** -Dedicated timetabling resource (26 heads) within Capacity Planning, including training & familiarisation for the Scottish network. -Strategic planning capability (14 heads) including alignment and integration with the rest of the network, including supporting economic, station and capacity analysis activities. -Development and delivery of an MoU (or equivalent) with Transport Scotland for early stage enhancement project development informed by the enhancement pipeline -Identification of third party investment opportunities and evaluation of the whole network strategic fit for proposed investment in Scotland -Key requirements of the Scottish HLOS (£2m uplift vs CP5) -Development of whole industry client capability and resource -Creation & management of Journey Time metric -Ongoing support for the development of a 'Scottish gauge requirement' and continued use in strategic planning -Engagement and support in developing key freight growth and average speed improvement activities -Development of engineering access frameworks to support London-Scotland possession deconfliction -Supporting policy, programme and franchising capability within the System Operator, including delivery of process improvement projects benefitting Scottish outputs and activities **Capital Expenditure** -improved timetabling capability including introduction of greater granularity in the timetable, conflict detection, and timetable data management, with benefits to performance in Scotland to be calculated -improved access planning capability including introduction of a replacement for the Possession Planning System used in Scotland -creation of greater analytical capability, informing choices made in Scotland and nationally surrounding the balance of performance, operational requirements and journey time					

4. System Operator outputs

Our current scorecard (which is provided below for context) was drafted during the delivery of the System Operator fit for the future programme, and is heavily weighted towards measuring our outputs and performance as a management tool for the function.

Table 4.1 – 2017/18 Scorecard

Safety & Sustainability	17/18		
	WORSE THAN TARGET	TARGET	BETTER THAN TARGET
Work-related absence (# of new work related absence incidents)	37.05	31.98	27.04
Workforce Safety (% of close calls closed within 90 days)	80%	85%	90%
Health & Wellbeing Plan milestones (# planned milestones achieved)	80%	90%	100%
Sustainability (# volunteer days undertaken)	302.1	318.5	334.5
Financial performance	**17/18**		
	WORSE THAN TARGET	TARGET	BETTER THAN TARGET
Financial Performance Measure – (Performance against budget (£m))	24.28	23.80	23.32
Train Performance	**17/18**		
	WORSE THAN TARGET	TARGET	BETTER THAN TARGET
Impact on Train Performance (Delay Minutes)	294,254	280,242	266,230
Impact on Train Performance (Incidents)	22,843	21,756	20,668
People	**17/18**		
	WORSE THAN TARGET	TARGET	BETTER THAN TARGET
Your Voice Action Planning (Planned Milestones per period)	80%	100%	120%
Milestone Delivery	**17/18**		
	WORSE THAN TARGET	TARGET	BETTER THAN TARGET
Rail Development Programmes			
Route Study Programme	60%	80%	100%
High Speed Rail	60%	80%	100%
Crewe	60%	80%	100%
Northern Powerhouse Rail	60%	80%	100%
Midlands Connect	60%	80%	100%
Scottish Enhancement Development	60%	80%	100%
Wales & Western Enhancements Programme	60%	80%	100%
TfL / Crossrail 2	60%	80%	100%
Brighton Mainline	60%	80%	100%
Functional Improvement Programmes			

Capacity Planning programme milestones	**60%**	**80%**	**100%**
SO Strategic Business Plan	**60%**	**80%**	**100%**
End to end planning	**60%**	**80%**	**100%**
Functional Continuous Improvement Plan	**60%**	**80%**	**100%**
CP6 Enhancements Plan submissions	**60%**	**80%**	**100%**
Franchise Milestones	**17/18**		
	WORSE THAN TARGET	**TARGET**	**BETTER THAN TARGET**
West Coast Partnership	**60%**	**80%**	**100%**
East Midlands	**60%**	**80%**	**100%**
Wales & Borders	**60%**	**80%**	**100%**
South East	**60%**	**80%**	**100%**
Delivery to Customers	**17/18**		
	WORSE THAN TARGET	**TARGET**	**BETTER THAN TARGET**
TW -12	**93%**	**95%**	**100%**
New Working Timetable Development	**90%**	**95%**	**100%**
Timetable Production Milestones	**90%**	**95%**	**100%**
Customer Advocacy (Routes)	**70%**	**80%**	**90%**
Customer Advocacy (Operators)	**70%**	**80%**	**90%**
Customer Advocacy (Funders)	**70%**	**80%**	**90%**

For CP6 we will use a balanced scorecard, widening our suite of indicators to reflect our outputs throughout our operational model and including the delivery of our customer's priorities.

Because of the diverse nature of our customer base, there are not a significant number of metrics that are of equal importance to all customers that can be displayed on a single scorecard. We are therefore proposing a tiered scorecard structure, which is outlined in Section 4.1.

It is also important to recognise that a significant proportion of our activity does not lend itself to quantitative measurement and reporting and will require narrative context. We will therefore use a range of supplementary reporting mechanisms for more qualitative aspects of our delivery, including an annual narrative report.

We are acutely aware that customer priorities can change. Therefore, the indicators included within the proposed scorecard may change throughout the Control Period so that we measure our performance within the context of our customers' priorities. Equally, targets may need resetting as outputs are traded off to meet emerging demands on the system.

Table 4.2 Long Term Functional Scorecard (Tier 1)

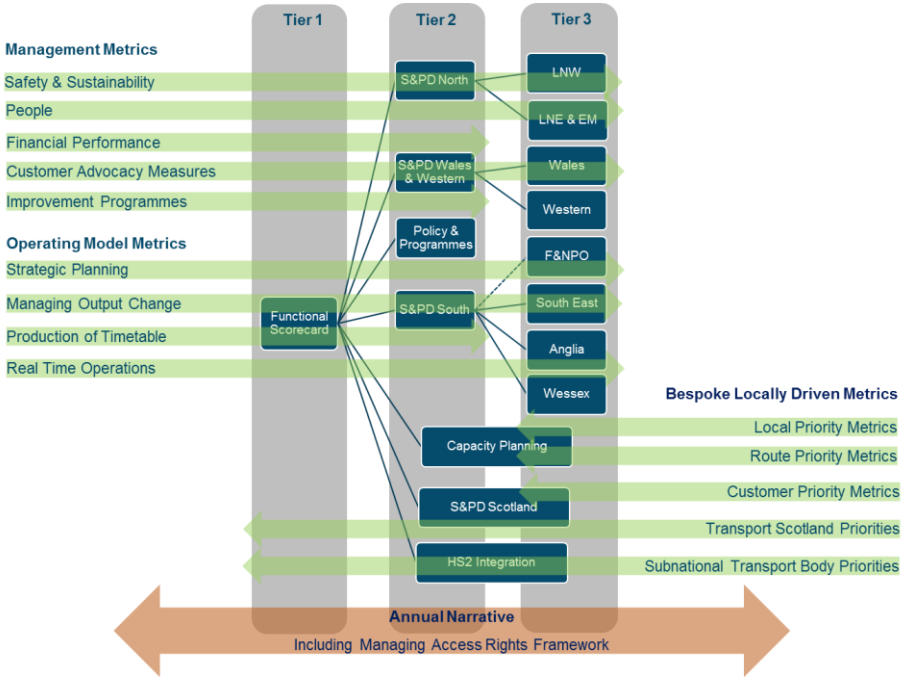
Safety & Sustainability		18/19	19/20	20/21	21/22	22/23	23/24	24/25
Work Related Absence	WORSE THAN TARGET		43.63	43.63	43.63	43.52	42.95	
	TARGET	TBC	41.55	41.55	41.55	41.45	40.90	TBC
	BETTER THAN TARGET		39.47	39.47	39.47	39.38	38.86	
Health, Safety & Wellbeing Plan Milestones	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							
Sustainability - #volunteer days taken	WORSE THAN TARGET		197.36	221.31	236.84	259.89	287.53	
	TARGET	TBC	207.75	232.96	249.30	273.57	302.66	TBC
	BETTER THAN TARGET		218.14	244.61	261.77	287.25	317.79	
Real Time Operations		**18/19**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**24/25**
Impact on Train Performance (Delay Minutes)	WORSE THAN TARGET	382,578	340,030	334,929	329,906	301,763	295,727	
	TARGET	364,360	323,838	318,980	314,196	287,393	281,645	TBC
	BETTER THAN TARGET	346,142	307,646	303,031	298,486	273,023	267,563	
Impact on Train Performance (Incidents)	WORSE THAN TARGET	27,006	24,105	23,744	23,387	20,830	20,309	
	TARGET	25,720	22,957	22,613	22,273	19,838	19,342	TBC
	BETTER THAN TARGET	24,434	21,809	21,482	21,159	18,846	18,375	
Financial Performance		**18/19**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**24/25**
Financial Performance Measure – Opex (£m)	WORSE THAN TARGET		41.92	42.53	43.24	43.65	42.83	
	TARGET	TBC	41.30	41.90	42.60	43.00	42.20	TBC
	BETTER THAN TARGET		40.68	41.27	41.96	42.36	41.57	
Financial Performance Measure - Capex (£m)	WORSE THAN TARGET		8.16	13.04	22.37	14.10	6.57	
	TARGET	TBC	7.70	12.30	21.10	13.30	6.20	TBC
	BETTER THAN TARGET		7.24	11.56	19.83	12.50	5.83	
People		**18/19**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**24/25**
Your Voice actions	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							
Operational Planner Vacancy Gap	WORSE THAN TARGET		8%	7%	7%	6%	5%	
	TARGET	TBC	6%	5%	5%	4%	3%	TBC
	BETTER THAN TARGET		4%	3%	3%	2%	1%	
Strategic Planning		**18/19**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**24/25**
Strategic Planning Milestones	WORSE THAN TARGET							
	TARGET	Confirmed via an annual plan in the preceding year						
	BETTER THAN TARGET							
Managing Output Changes		**18/19**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**24/25**
Transport Scotland Priorities	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							
Subnational Transport Body Priorities	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							

Project Development Milestones	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							
Franchising Milestones	WORSE THAN TARGET							
	TARGET	5	3	3	6	2	6	4
	BETTER THAN TARGET							
Event Steering Group Milestones	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							
Managing the Access Rights Framework		18/19	19/20	20/21	21/22	22/23	23/24	24/25
System Operator activity in managing the access rights framework is described in our annual narrative report								
Production of the Timetable		18/19	19/20	20/21	21/22	22/23	23/24	24/25
WTT production milestones	WORSE THAN TARGET							
	TARGET	TBC	4	4	4	4	4	TBC
	BETTER THAN TARGET							
TW-12 compliance	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							
Timescale delivery of customer change	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							
Improvement Programmes		18/19	19/20	20/21	21/22	22/23	23/24	24/25
Capacity Planning investment portfolio	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							
Improvement initiative Milestones	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							
Delivery to customers		18/19	19/20	20/21	21/22	22/23	23/24	24/25
Customer advocacy (Route)	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							
Customer advocacy (Operator)	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							
Customer advocacy (Funder)	WORSE THAN TARGET							
	TARGET	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	BETTER THAN TARGET							

4.1 Scorecard structure

Our planned measurement system provides visibility of our outputs at three different levels to encourage greater transparency and accountability to our stakeholders.

Figure 4.1 Illustration of System Operator scorecard structure



The tier 1 functional scorecard is designed to demonstrate our delivery in each stage of our operational model; its primary purpose is allowing the Managing Director and leadership team of the System Operator to manage across the function to deliver the required outputs.

The functional scorecard is underpinned by second tier indicators aligning to our Strategy & Planning, HS2 Integration, Policy & Programmes and Capacity Planning teams, measuring specific outputs within the operational model.

These scorecards will contain a number of common indicators relating to the functional scorecard – e.g. safety – and also focus on our delivery throughout the operational model at a more granular level.

Our delivery of sub-national funder priorities will be also demonstrated as part of our tier 2 scorecards, alongside franchise milestones and other measures included in the functional scorecard in a disaggregated manner; such as project development milestones and the delivery of our strategic planning programme of activity.

Supporting this structure, we are developing a series of scorecards at tier 3 level that will be agreed annually, to be used between the Route System Operator team, and our route and operator customers. This third tier of scorecards will contain measures agreed with the Route Businesses and with the operators for which they are the lead route. Importantly, this will enable greater visibility of our delivery at a local level, including metrics which outline local priorities and those of our customers. We do not propose that these scorecards contain measures that are regulated at this disaggregated level, although delivery across the basket of measures can be used to gauge our performance overall.

We will continue to engage with our customers so that as their priorities evolve, they are able to see our delivery against these priorities represented on the Route System Operator scorecards. The measures to address each priority will be identified in conjunction with our customers, and refreshed annually so that we measure our performance within the context of our customers' priorities and take changes to our customer base into account.

Ensuring that the high-level requirements of Scottish Ministers are embedded in the scorecard for System Operator and the Route Businesses (including the Freight & National Passenger Operator route) is a priority to ensure aligned objectives and to drive the correct behaviours.

The System Operator scorecard structure, including draft scorecards for each tier, is outlined further within a supporting document to this SBP.

4.2 Scorecard metrics

Our scorecard is intended to be our main regulatory reporting mechanism, as it will represent the needs of our customers. Many of the scorecard outputs that we will deliver in CP6 are under development and consultation. As priorities amongst our stakeholders adjust in advance of, and throughout CP6 these will evolve.

Each section of the scorecard is summarised below. Detailed definitions and forecasts (where possible) for each metric are outlined in Appendix F.

4.2.1 Safety & sustainability

This section of our functional scorecard includes a measure of the number of work related absences experienced by our people, with a target associated with our organisational size. To help achieve the challenging targets proposed we will maintain a programme to focus on our Health, Safety & Wellbeing. The milestones for this programme will be informed by the engagement of our teams and analysis of supporting data to identify topical interventions. Our commitment to supporting sustainability will also be measured through volunteering days, with an annual increase forecast.

4.2.2 Real time operations

Our measurement of real time operations consists of train performance incidents and delay minutes associated with defects in the timetable. Our forecasts for this measure indicate a plan of continuous improvement to reduce delay incidents and associated minutes in an environment of increasing complexity, evidenced by the increasing intensity of the network's use and the competing demands of journey time, performance and capacity.

4.2.3 Financial performance

The management of our finances, both operational expenditure and in relation to capital investment will be measured with a range to encourage efficiency.

4.2.4 People

Alongside measurement of our employee engagement action plans, which will be developed by our teams as feedback is gathered; our stakeholder consultation has highlighted a priority that we must demonstrate sufficient resources in timetable development (Operational Planners) to deliver timetables of a high quality in a timely manner, and to respond to the needs of our customers promptly. Accordingly, we propose to manage the vacancy gap in this role particular, within an organisational structure designed to enable capacity planning to deliver for our customers.

4.2.5 Strategic planning

Delivery of our strategic planning activity will be measured against a programme plan, developed annually following stakeholder consultation to assess priorities and needs of our strategic planning process. The plan will be approved by the Professional Head of Strategic Planning, before being endorsed by the advisory board.

4.2.6 Managing output changes

This section of the scorecard demonstrates our delivery against our stakeholders and funders requirements, including the priorities of DfT, TS, Welsh Government and SNTBs. The scope of these metrics will be agreed on an annual basis alongside funding to deliver them where applicable.

Project development milestones will be incorporated into our programme plan on conclusion of the approval of a remit, programme plan and confirmation of funding for the delivery of the milestones. A change control process to update our milestones will be maintained throughout CP6 as such decisions may not naturally align with fiscal years.

Franchise milestones have been developed to support our enhanced role in the franchising process, with milestones currently calculated to support the delivery of the Rail Franchise Schedule as published in July 2017.

A programme plan for Event Steering Groups will be developed and agreed with the industry, providing visibility of our plans to lead the industry in preparing for major timetable change events as articulated in the Calendar of Events.

4.2.7 Managing the access right framework

Our industry consultation has highlighted the Sale of Access Rights process as a priority for our train operator customers. They require the process to be transparent and open; conducted in a timely manner without undue barriers

and with decisions made in a consistent manner informed by robust evidence and analysis.

Although a priority, the rail industry has not as yet developed a measure that can represent the requirements our customers have of us in this area with current proposals either being outside of our accountability or liable to drive perverse incentives. We are committed to delivering our customer requirements, so we currently plan to discuss this area narratively in our planned annual report.

4.2.8 Production of the timetable

The production of the timetable is measured by the delivery of milestones reporting the key dates in the development process. The indicative milestones included outline the existing timetabling process, and may be adjusted through CP6 as plans to improve the timetable development process are delivered.

In response to customers' priorities identified through consultation, the response time to customer driven change to the timetable will be measured. A benchmark and improvement trajectory for the measure will be calculated in advance of CP6.

The delivery of the Informed Traveller process will continue to be measured by the delivery of timetable information to downstream and public information systems 12 weeks prior to timetable operation, although its relative importance to customers is variable.

4.2.9 Improvement programmes

Progress in delivering our improvement programmes will be measured through delivery of milestones. As development of our improvement programmes continues, this section will develop further.

4.2.10 Delivery to customers

In addition to the suite of measures developed to indicate delivery of customer priorities at a local level, we will develop an output based customer advocacy measure. The approach will help provide a qualitative assessment of our outputs, including the quality of the service we supply in delivering our outputs.

4.3 Other measurement systems

We recognise that there is information that is of interest to our customers and to the ORR that does not lend itself to expression as a metric on a scorecard. This is typically information that requires narrative to lend context to an otherwise meaningless number.

For example, we are currently exploring the idea of capacity on a section of route as described against a theoretical maximum capacity based on headways. Information such as this will be shared in documents such as the Network Capacity Statement or an annual report.

Other areas that could inform an annual report include:

- our activity in relation to railway system safety;
- our activity in managing the access rights framework;
- end to end planning and delivery – delivery of timetable outputs that were expected at the time of funding of an enhancement programme, variance from expectations and explanatory narrative;
- network-wide access framework compliance;
- increased outputs delivered without significant investment requirement;
- an annual statement of our strategic planning activity;
- level of known timetable conflicts;
- congested infrastructure;
- output quality.

There may also be demand for revision and relaunch of the system operation dashboard, an annually updated suite of cross-industry measures to demonstrate how well the rail system is operating overall. We will review this with industry stakeholders in the coming months.

4.4 Governance

With our decision making accountability having an effect across the industry, it is important that we are able to demonstrate openness and transparency, invite scrutiny from stakeholders, and be able to advance network policies without fear or favour of any industry member – including Network Rail's operating units.

It is not enough for us to know ourselves that we are acting independently; we must also be - and be seen to be – independent of any vested interests that may originate from being within Network Rail and working closely with the route businesses or any particular customers.

Our governance framework shows how we will be held to account for the development and delivery of our business plan.

The framework has been developed to;

- provide independent scrutiny;
- promote transparency in the way we work – including openness in our business planning, economic analysis, option ranking and decision making;
- enable direct customer and stakeholder engagement at a route and network wide level;
- bring expert advice and challenge to the System Operator leadership team; and
- reinforce our distinct role within Network Rail and be a bulwark for our independent approaches and behaviours.

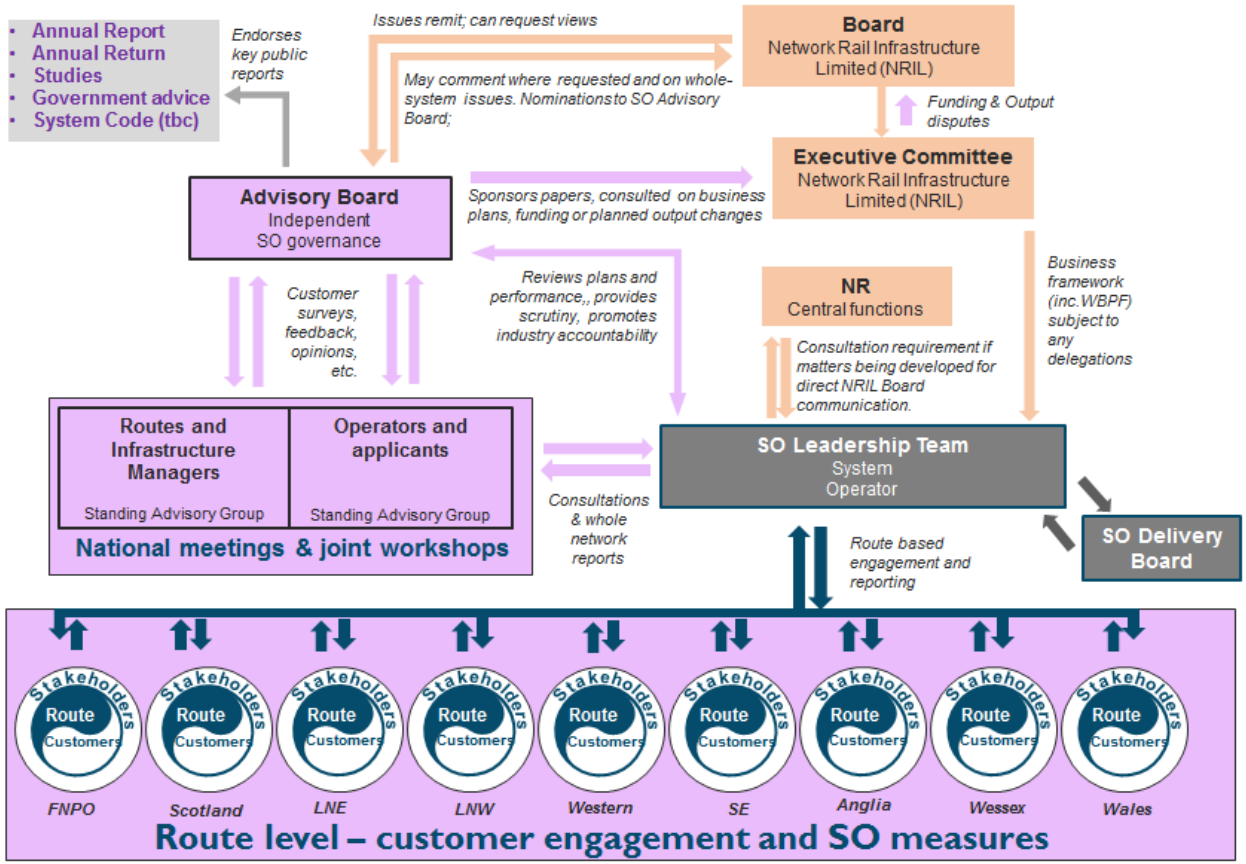
The framework is intended to enable the System Operator to advance network policies that command the confidence and support of all of our stakeholders - which extends beyond our own infrastructure.

4.4.1 Framework principles

In order for our customers (funders, operators, routes and other infrastructure managers) to be confident in our governance, we have set out a set of clear principles to guide the establishment of the governance bodies, their relationships, the approach to reporting, and the behaviours.

Principle	Why is this important for our governance framework be effective?
Whole industry accountability	The System Operator must be able to demonstrate openness and invite scrutiny from all its stakeholders on an equitable basis – with all its customers built into engagement activities. Reporting should include Scorecards with clear measures and customer informed targets.
Transparency	The governance framework should be clearly defined and set out, with stakeholders consulted over business plans, investments or policy that could materially impact on their businesses. There should be collective, route and stakeholder grouped channels of communication as appropriate.
An independent mind-set	The System Operator should be able to function as a distinct entity within Network Rail, and not be incentivised to favour one industry sector over another. Scorecards (and incentives) should be reviewed by a senior and independent governance body to provide support to independent behaviour.
Independent governance within Network Rail	A senior and independent governance body should also be able to review and where necessary check (for Network Rail Board-level review) any centrally proposed changes by Network Rail to the System Operator's business plans.
Separation of commercial and competing interests	The System Operator should comply with regulatory and legislative separation requirements (including those of capacity allocation bodies due to its timetabling activity), and avoid risks of commercial conflicts or advantage for any industry participants.
Fact based approaches	Decision making and advice should be high quality - informed by data and stakeholder input, and be increasingly proactive.
Using and setting best practice	The framework should apply identified best practice from similar rail bodies and System Operators from other industry sectors, and its evolution be informed by benchmarking.

Figure 4.2 System Operator governance framework



This framework incorporates arrangements applied in Network Rail's existing group structure, and embodies elements from a number of other System Operators and capacity allocation bodies (including, for example, the Rail Freight Corridors in Europe with which a number of our customers will be familiar).

The governance framework should enable key stakeholders to be consulted over any business plans, investment or policies that could have a significant material impact on their business, or in the case of public bodies their relevant activities, as well as hold the System Operator to account on behalf of its funders, customers and end users

4.4.2 The Advisory Board

This board will hold the System Operator to account, consistent with its remit, for the development and delivery of its business plan on behalf of its funders, customers and end users.

Its activities include;

- Independent scrutiny of the System Operator's business plans and policies, their execution, effectiveness, and ongoing engagement.
- Provision of expert advice to the Leadership Team.
- Remitted activities from the Network Rail Board to bolster the System Operator's independence within Network Rail.
- Providing wider assurance to funders, customers, and stakeholders.

Figure 4.3 Constitution of the Advisory Board

The Advisory Board will be independently chaired with board members to include;

- a Network Rail non-executive director;
- MD System Operator;
- an attendee to provide operator input elected through the class representatives committee;
- main funders (DfT and TS);
- a rail system operator expert from outside Great Britain;
- individuals with passenger and freight customer expertise (e.g. a nominee of a rail freight body and a nominee of Transport Focus or LondonTravelWatch);and
- an independent chair.

This Board will meet quarterly and will have accountability for the approval of the annual business plan and annual report and would provide challenge and advice on the System Operator scorecard.

4.4.3 Standing advisory groups

We will implement two industry advisory groups, one for operators and one for infrastructure managers (Route Businesses and other IMs). These will meet three to four times a year and provide dedicated channels for industry engagement with the leadership team and Advisory Board.

They will be formal consultees to the System Operator scorecard and business plan, input into plans and strategies, and enable network and system level discussion with key customer groups – either separately on relevant issues, or together.

Activities include;

- Network level engagement with all customers both collectively and through separate groups of like-stakeholders.
- Forums for consultation and system-level co-ordination
- Customer surveys and channels to provide direct feedback to the Board.
- Independent scrutiny of the System Operator's business plans and policies, their execution, effectiveness, and ongoing engagement.

The Standing Advisory Groups will be able to request information and publish their own opinions on any System Operator matters that they wish.

4.4.4 Route-level localised System Operator engagement

Engagement here will be led by the Route System Operator, and tailored to the needs of customers to enable operational level discussion on System Operator impacts and planning. This engagement will be supplemented by the Tier 3 route level scorecards. It is likely that routes and operators will want to integrate additional reports, communications and meetings as far as possible into existing structures.

4.4.5 System Operator Delivery Board

Supporting the System Operator leadership team, an internal System Operator Delivery Board has been introduced. This Board is formed of members of the leadership team, and will provide high level governance of our improvement programmes and review of the System Operator scorecards.

As with all capital expenditure in Network Rail, the System Operator will be subject to Network Rail's Investment Regulations. These regulations control the authorisation of capital expenditure and release of associated funding. Applications to the relevant Network Rail Investment Panel will only be made when the relevant stages in our project governance framework have been achieved.

4.4.6 Project and programme governance

System Operator Programmes are managed using Network Rail's approved governance process providing a consistent and transparent approach to delivering change and improvements into the business.

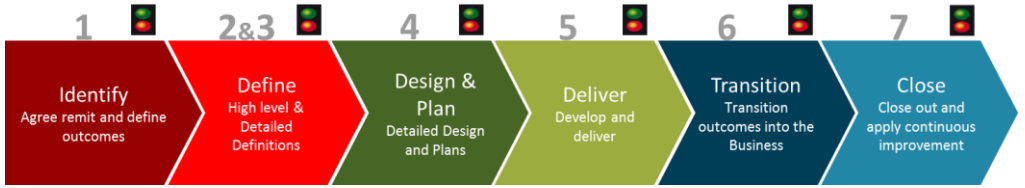
Managing Successful Programmes (MSP4NR) is applied to business change programmes which are fundamentally linked to strategic objectives, of high benefit value, may require extensive system changes and impact behavioural change.

A fully aligned local methodology is applied to programmes which deliver enhancements, business improvements, contract renewals or new trading arrangements.

The approach ensures programmes fully consider their remit, outcomes and benefits; developing robust project documentation and plans whilst managing risk, budgets and resources effectively.

Lessons learned reviews throughout the framework and on closure will support the application of structured continuous improvement.

Figure 4.4 Managing Successful Programmes 4 Network Rail stage gates



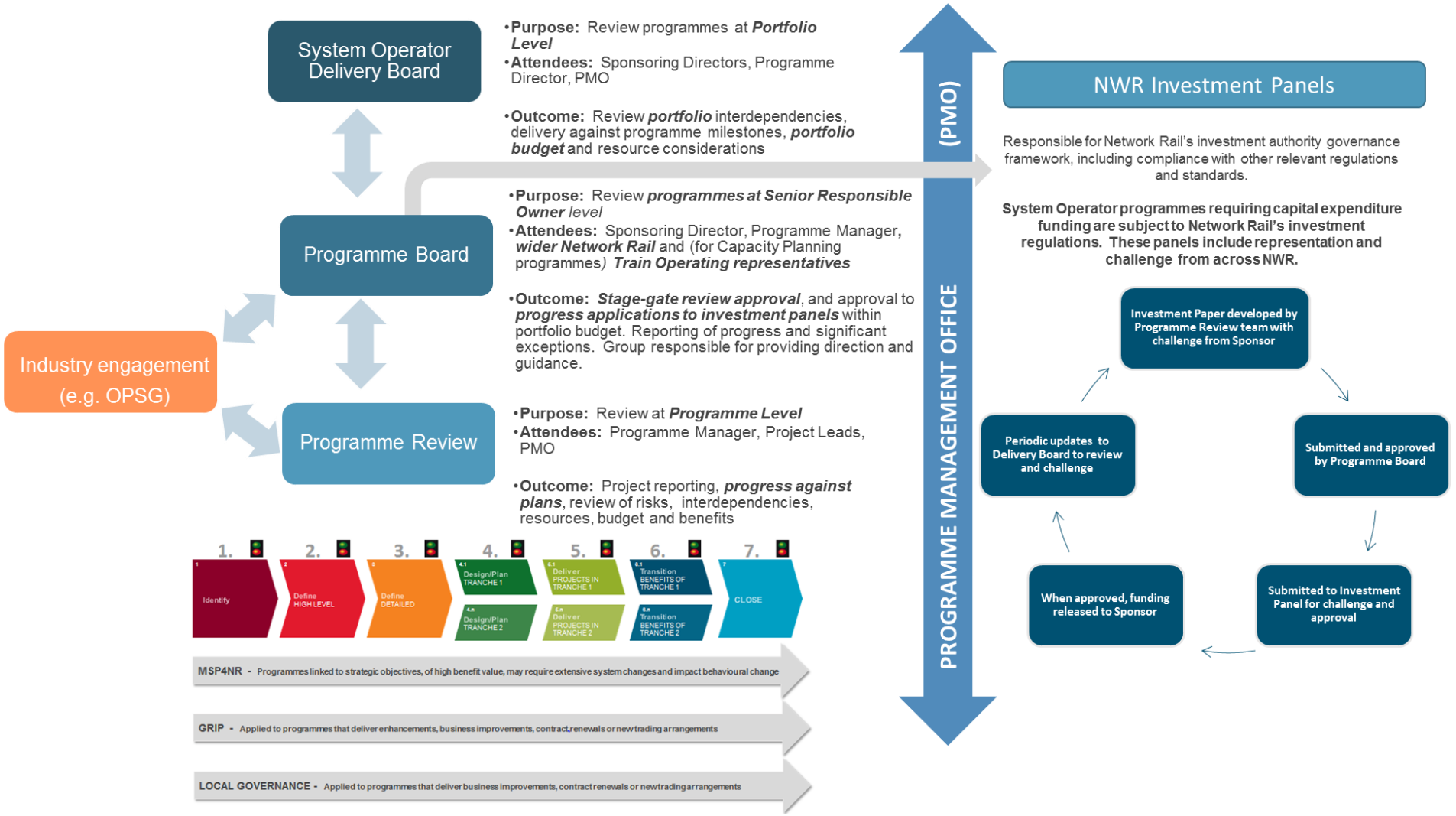
A member of the System Operator leadership team will be appointed to act as the Sponsor for each of our improvement initiatives.

Where relationships exist with wider Network Rail functions, systems and processes, we will progress the initiative with full MSP4NR governance and the appropriate engagement and assurance with Network Rail's Business Change Group.

We anticipate that a member of the System Operator leadership team will act as the Senior Responsible Owner for the programme. They will be supported by a Project Management Office within the Policy & Programmes team.

The capital programmes being delivered by capacity planning will be overseen by the Capacity Planning Programme Board, including individuals within the wider Network Rail and representatives from our train operating customer community, to offer constructive challenge, support for our delivery, and assurance at each stage gate within the MSP4NR project governance framework.

Figure 4.5 Programme governance framework



4.5 Activity tables

The following tables outline the key risks, opportunities and constraints in delivering our plans and objectives. Each table is aligned to the relevant scorecard section which includes our intended measures, and provides an overview of the actions we are taking (and plan to take) to mitigate the risks in achieving our objectives. Improvement activities are further outlined in Section 7.2.

4.5a Safety & sustainability

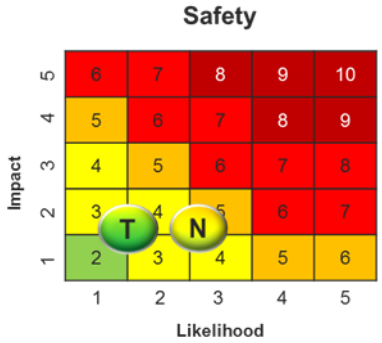
Summary of objectives	Safety is core to everything we do, and a healthy team will enable us to be a more successful team. As System Operator we can make a meaningful contribution to whole railway system safety.			
No.	**Key constraints (c), risks (r) and opportunities (o)**	**What we plan to do**	**Owner**	**Timescale (start/ finish)**
1	**R:** A **workplace accident** causes loss of productivity and impacts team morale	• Continue to grow a safety conscious culture, where we don't walk by and are not afraid to be challenged. • Develop great safety leaders to promote and role model the right behaviours building on company and local initiatives.	Functional Directors	Throughout CP5 and CP6
2	**R: Workplace stress** results in loss of productivity and impacts on team morale	• Put in place a health, safety and wellbeing plan to support an overall improvement across the function. • Use the plan to promote the benefits of good mental wellbeing and help our teams to help themselves, and their colleagues, to identify and manage the signs of stress. • Encourage team leaders to actively manage the balance of workload within the team and look for signs of stress. • We will measure work related absence to track improvements as a result of our plan.	Functional Directors Lead HR Business Partner	Throughout CP5 and CP6
3	**R:** A **lack of CDM** (construction design & management) **competence** could result in an increased safety risk downstream in the project process	• Put in place programme of Construction Design & Management Client training for the relevant roles in the function and actively manage overall competence. • Utilise Professional Head of Strategic Planning to assess requirements and measure competence across the planning community. • Benefit from wider Development and Sponsorship training and development frameworks.	Strategy & Planning Director North Functional Directors	Programme by end of CP5 with achievement targets for CP6
4	**O:** A **fit and healthy team** will be more productive and engaged	• Put in place a health and wellbeing plan to support an overall improvement across the function. • Use the plan to support our teams to recognise the benefits of good physical wellbeing and how this can help at work and home	Functional Directors	Throughout CP5 and CP6
5	O: We have an opportunity to support the wider business by **closing Close Calls** efficiently	• Measure time to closure and support our teams to resolve close calls. • Demonstrate the benefits of raising (and closing) calls in support of our safety culture.	Functional Directors	Throughout CP5 and CP6

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Timescale (start/ finish)
6	O: **Volunteering**, individually and in groups, enables us to support our mental health, gain team building benefits and put something back into the community.	• Offer and promote opportunities for volunteering – at individual and team level. • Encourage team leaders to support volunteering applications. • Share volunteering case studies and experiences, and seek ways to benefit from these in the office.	Functional Directors	Throughout CP5 and CP6

7	O: We can drive improvements in whole railway **system safety** through our involvement in the franchising process, how we prioritise projects and in the recommendations we make to funders.	• The creation of the System Operator function provides an opportunity to make a real contribution to railway whole system risk through:
		  ○ a whole network approach;
		  ○ early involvement in the franchise process; and
		  ○ a more focused approach using continuous modular strategic planning.
		• Develop a System Operator system safety Enterprise Opportunity Record to identify, implement and track ways in which we can contribute.
			Policy and Programmes Director	Enterprise Opportunity Record by end of CP5 with achievement targets for CP6

8	O: We can improve **operational safety** through more effective timetable planning and development.	• Further assessment of the practicalities for delivery of automation in timetabling systems to prevent train on train and train on possession conflicts. • Improve our data and systems, alongside other key Network Rail functions, to enable conflict detection of gauging, routing and infrastructure conflict with services.	Capacity Planning Director	Throughout CP5 and CP6
9	O: We can improve **operational safety** through supporting Route Businesses to enhance operational readiness for timetable change.	• Maintenance and communication of the Approved Code of Practice for Operational Planning and Implementation of Timetable Change, and review of the Timetable Change Assurance Group processes to inform operational readiness.	Capacity Planning Director	Throughout CP5 and CP6

Note: the assessment of the risk outcome is based on professional judgement – 'N' outlines net (current) position, 'T' outlines target position (after actions outlined above).



Summary of risk outcome
We are currently managing safety effectively, however there are opportunities for improvement which could bring personal, functional and system wide benefits. We intend to implement improvement plans and associated measures.

4.5b Real time operations

Summary of objectives	Throughout CP6 we will continue to reduce the number of timetable delay incidents and minutes in support of the long term vision of a zero defect timetable. The true definition of a zero defect timetable will be shifted to the on-going identification and removal of defects in the timetable at drafting stage, such that timetables are published to an ever improving quality.

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
1	**R: Timetable change** is materially higher than forecast (calendar of events) resulting in less resource than required to deliver the timetable change in sufficiently robust manner.	• Enhance calendar of events process. For example, calendar of events to include new franchise commitments (e.g. Sunday service increases). • CP6 Opex submission is intended to fund an appropriate level of planning resource to meet the volume of work described in the calendar of events. • Work with operators to develop improved forecasts and forward plans to reduce a reactive approach.	Head of Timetable Production Delivery	All TOCs / FOCs	Y1 CP6
2	**R**: Level of timetable change post Informed Traveller offer (TW-14) continues at current levels. **Change post Informed Traveller** is effectively rework, that in turn reduces the time available to validate trains. Lower levels of validation have the potential to result in timetable planning (502a) delays.	• Develop and deliver short term planning recovery plans for effected operators. Identify specific causes of late change and work together to identify improvements. • Utilise industry fora to measure change. • Deliver technology improvements to automate as much data handling and manual process as is practicable.	Head of Timetable Production Delivery	All TOCs / FOCs	Throughout CP6
3	**R**: Timetable improvement activities do not deliver **performance benefits** estimated resulting in higher than forecast 502a delay incidents.	• Adjust capacity planning's organisation structure to place more accountability on an identified team to strengthen remits, and establish a professional sponsor role. • Implement improved programme governance framework, invest in project delivery capability. • Ensure benefit appraisals are realistic and not duplicative.	Programme Director	All TOCs/FOCs	Throughout CP6
4	**O**: **Increase retention** levels of Operational Planners. It takes approximately 12 months for a planner to become fully competent and productive. By increasing retention, it follows that fewer 502a delays are likely to be generated.	• Invest in personal development; competency related pay and other incentives for planning staff. • Establish a technical career path for experienced and expert planners in parallel to management roles. • Review salaries for market competition. • Create a culture of care, kindness and engagement.	Capacity Planning Director	All TOCs/FOCs	Y5 CP5 Throughout CP6
5	**O**: Increase capacity planning establishment to reflect the **size of timetable change events** and increasing complexity of planning on a congested network ability. This will enable us to deliver the required level of output for an increased level of activity.	• Our SBP includes an estimation of increase in workload and the necessary organisational structure to deliver it. • Work with capital programmes to fund posts when major enhancements are to be undertaken resulting in major timetable change.	Head of Timetable Production	All TOCs/FOCs	Y5 CP5

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
6	**R**: Unable to **analyse the impact of timetable change** on performance resulting in worse performance than forecast.	• Work with the industry to agree and define the appropriate place for different types of modelling to take place in different circumstances. • Continue to develop existing performance models, and use the whole system modelling programme to identify new opportunities to inform better decision making capability. • Continued collaboration with the train performance communities to better understand the relationship between the timetable and train service reliability.	Head of Timetable Development	All TOCs/FOCs	Throughout CP6
7	**O**: Improve the **speed and ease** of identification of timetable defects to decrease the number of 502a delay incidents.	• Continue to develop ATTune tool, notably utilise in short term planning (STP) activity. • Increase analytical capability within capacity planning organisation.	Head of Timetable Production Development	All TOCs/FOCs	Y1, CP6
8	**O**: Improve operational planner **productivity** to increase the level of train plan validation undertaken and thus reduce the number of timetable incidents.	• Improve utilisation of data gathered in systems like the Train Planning System (TPS) to develop management information to support performance management. • Develop team leader and line management capability through improved training and, in time, introduce practice management and resource management capability. • Automate manual data tasks within the planning process in order to liberate time for increased rates of validation.	Programme Director and Head of Timetable Production Delivery	All TOCs/FOCs	Y1, CP6

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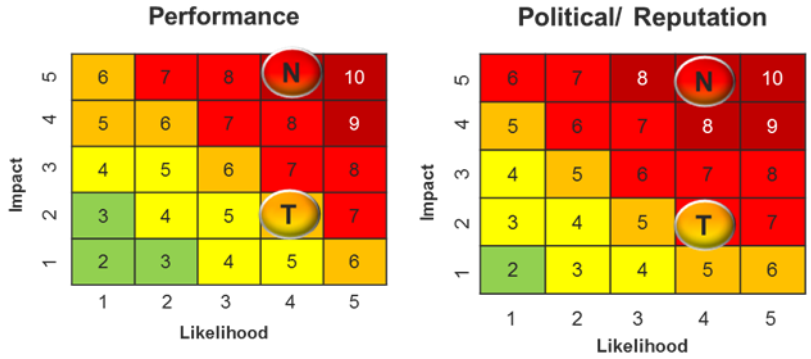

Summary of risk outcome
Historically timetable performance risk appetite has been high – as unlocking capacity has been a political and reputational priority – however, as the level of performance begins to become a growth constraint, emphasis is now shifting.
Improving performance whilst maintaining a lean organisation, receiving increasingly high numbers of access requests and delivering broadly manual processes means the impact and likelihood of performance risk materialising is high unless the interventions identified are funded and delivered.

4.5c Financial performance

Summary of objectives	We are striving to produce a robust and efficient financial plan for CP6 that will enable us to deliver the required outputs and have undertaken extensive customer engagement to ensure that we respond to the needs of our customers.

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
1	**R**: The **volume and complexity** of System Operator activity increases, requiring additional operating expenditure to meet customer requirement.	This plan has been developed taking into account a more diverse train service specification and industry funding environment. We must explicitly put passengers and end-users at the centre of our plans, and align developing our strategies with the differing timescales of our stakeholders needs. Our organisation,(post System Operator fit for the future change programme) and outlined within this plan enables this. We will continue our implementation of structured continuous improvement which will allow us to work in this more complex environment within the envelope proposed in our core plan.	Policy and Programmes Director	TOCs/FOCs, applicants, routes DfT / TS, and ORR	Throughout CP6
2	**R**: The assumptions used to build this strategic plan change, creating a **financial exposure** or **risk to outputs.**	This plan has been developed recognising a level of uncertainty in forecasting cost requirement, and with an underlying set of assumptions. A range has therefore been used in calculating our cost requirements. All assumptions outlined within this plan will be tracked, and the System Operator leadership team alerted to any changes that might create an exposure. Any associated changes to our plans will follow the applicable governance framework either within Network Rail or the System Operator. There is a critical dependency for capacity planning around the volume of work, and any significant deviation from the calendar of events may require funding to be re-visited.	Policy and Programmes Director	TOCs/FOCs, applicants, routes DfT / TS, and ORR	Throughout CP6
3	**R**: A **lack of funding** leaves the System Operator unable to deliver its plans, outputs and/or performance to the level required by our customers.	Prioritise activity around available resources, providing clarity with Network Rail, DfT, TS and ORR as to the impact of less funding. Indicators and targets on the System Operator Scorecards will be adjusted to reflect the outputs and performance that can be delivered within the funding established.	Leadership team Policy and Programmes Director	TOCs/FOCs, applicants, routes DfT / TS, and ORR	Throughout CP6
4	**C:** The investment programmes outlined within this plan are at a pre-feasibility stage, leaving a level of **uncertainty in costs**/benefit expectations.	Detailed business cases will be prepared, and improvement programmes governed using Managing Successful Programmes for Network Rail (MSP4NR) principles. A clear change control process will be used to make maximum use of our available funding.	Policy and Programmes Director	TOCs/FOCs, applicants, routes DfT / TS, and ORR	Throughout CP6

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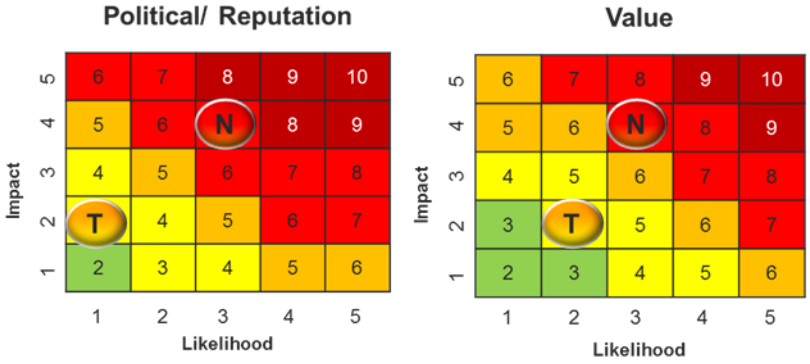

Summary of risk outcome

We have prepared a plan which enables the System Operator to deliver its outputs and customer needs in a more diverse and complex funding and specification environment, whilst ensuring that it is both efficient and reflective of our continuous improvement ambitions.

4.5d People

Summary of objectives	Develop our organisational capability to deliver upon our strategic themes of great people, great place to work and the delivery great performance. We will achieve this by our ability to attract, recruit and retain the very best people into the System Operator to become a sectoral leader.

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Timescale
1	**R:** Our priority to ensure we have excellent technical **skills and professional judgement**, may risk managers who are great technical specialists with limited people management capability.	Provide a range of management and leadership courses alongside developmental non-costed interventions to strengthen our people management capability, using the professional skills and capabilities of people managers and our Human Resources (HR) team.	Lead HR Business Partner	Throughout CP5 and CP6
2	**R:** An aging workforce and an increase in **competition for skill sets** relevant for roles within our industry.	Continue to focus upon new strategies for attraction and retention which also includes strengthening the links between personal development, talent and succession planning.	SO Leadership Team Lead HR Business Partner	Throughout CP5 and CP6
3	**R: Succession planning** for some senior roles as a result of demographic decline (birth rate 1975-1978) for the current average age, usual skills knowledge and experience to fulfil our senior roles.	Encourage full participation of all of our talent by challenging the models of leadership to attract and provide opportunities for those who are unable to adhere to more traditional patterns of work.	SO Leadership Team Lead HR Business Partner	Throughout CP5 and CP6
4	**R**: **Attrition rates** increase faster than our ability to attract and recruit into our operational planning roles which may impact upon our ability to deliver to quality and timescale.	Focus upon recruitment and workforce planning strategy, to include the development and use of both tactical and strategic forecasting tools to manage short term vacancy and longer term talent gaps. Cyclic recruitment programme of operational planning assistants, improve competency framework to allow the System Operator to closer match the market rate for top performing staff. Develop technical career paths for recognition of our best operational planners, and further development of line management to undertake professional care, development and performance management of our people.	Capacity Planning Director Lead HR Business Partner	Yr 1 CP6
5	**C**: **Organisational agility** where System Operator, as a Directorate within an 'arm's length body', will be required to follow policy and processes which may sometimes constrain our ability to attract and retain great people in the right place at the right time.	Strengthen our brand proposition by offering non-financial recognition and engagement strategies such as developmental opportunities, flexible working, career progression and professional recognition.	SO Leadership Team Lead HR Business Partner	Throughout CP5 and CP6
6	**O:** Promote a '**positive industry image'** through diverse talent and attraction strategies.	Demonstrate 'industry leadership' by setting and delivering to ambitious diversity targets, to achieve a workforce that reflects the environments within which we operate. We will actively seek to address our gender pay gap guided by Network Rail HR policy. Our System Operator leadership team will set people Key Performance Indicators and monitor progress.	SO Leadership Team Lead HR Business Partner	Yr 1 CP6

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Timescale
7	**O**: Be a sectoral leader and **role model** of 'the **planning profession'**.	Train our people to develop planning competence with a focus upon the areas of strategic network planning and capacity planning. This will include identification of activities for various organisation levels, time spent, client relationships, service proposition and how the professional contribution and success is measured.	Professional Heads of Capacity Planning & Strategic Planning	Throughout CP5 and CP6
8	**O**: Support **engagement** and **retention** through staff surveys and action planning.	Undertake regular temperature checks of our workforce engagement levels, developing an annual activity plan to support the engagement of our teams.	SO Leadership Team	Throughout CP5 and CP6

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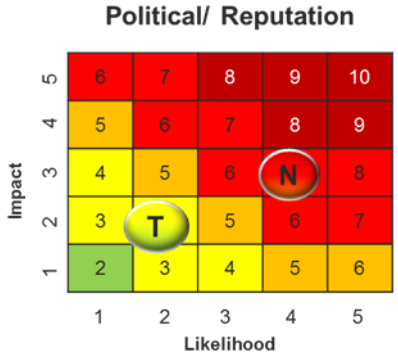


Summary of risk outcome
We recognise that our people are key to our overall success. The development of recruitment and retention strategies to support the System Operator, and the creation of Professional Heads to develop competency frameworks will support the retention and development of our people. Investment in our leaders, focus on the engagement of our teams and inclusion of specific roles vacancy gaps in our scorecard will support improved retention and engagement.

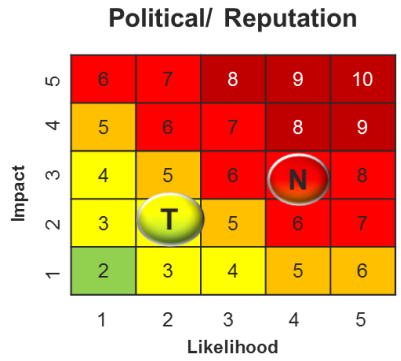
4.5e Strategic planning

Summary of objectives	Implement a strategic network planning process that puts the need of passengers and freight end-users at its heart and responds to the needs of the devolved funding environment

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
1	**C:** Develop the strategic network plans to **provide choices for funders** in line with the Network Licence commitment.	Implement a process of structured continuous improvement to the strategic planning process.	Strategy & Planning Director (North)	All TOC and FOC customers, funders and stakeholders	Commenced and on-going
2	**R:** In an **increasingly devolved environment** different funders have **differing objectives** and timescales which the long term planning process in its CP5 form address imperfectly, leading to information not being available to specifiers when required.	Implement a continuous modular strategic planning process with Transport for the North for the North of England Route Study. Establish a rollout plan and lessons learned.	Principal Strategic Planner LNE & EM Strategy & Planning Director (North)	All northern TOC and FOC customers, funders and stakeholders	Commenced and on-going
3	**O:** To implement a revised strategic planning process that puts the **needs of passengers and freight users** at its hearts and meets the differing objectives and timescales of potential funders. This builds on our commitments in Network Rail's Transformation Plan.	Establish a Professional Head meeting to coordinate the continuous improvement initiatives through the route based teams.	Strategy & Planning Director (North)	All TOC and FOC customers, funders and stakeholders	December 2017 and on-going
4	**R:** Resource requirements of the network-wide programme of CMSP become misaligned with level of planning required for different parts of the network leading to **reduced quality and timeliness** of plans.	Coordinate the production of a network-wide plan of modular strategic planning activity to enable network-wide coordination and resource management.	Programme Director	All TOC and FOC customers, funders and stakeholders	December 2017 and on-going
5	**R:** Not being aware of customer and stakeholder requirements leads to a programme of CMSP that does not inform their decisions when they need to make them resulting in **sub-optimal outcomes**.	With the routes, TOC and FOC customers, funders and stakeholders develop an annual plan for the continuous modular strategic planning and present annually to the System Operator Advisory Board.	Managing Director System Operator	All TOC and FOC customers, funders and stakeholders	Annually from establishment of board

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
6	**R:** Operating in an **increasingly devolved industry** requires **capability** of the strategic planning organisation and its processes that are beyond existing leading to sub-optimal CMSP and outcomes.	Professionalise the strategic planning capability through the development of capability and process frameworks through the development of an action plan.	Strategy & Planning Director (North)	All TOC and FOC customers, funders and stakeholders	March 2018
7	**O:** The creation of a **whole-rail-system project client** and sponsor capability based in Scotland, to control all stages of investment project development and delivery in order to support the Scottish government in their role as specifier.	Creation of a whole-system client organisation in the Strategy & Planning Director (Scotland) team and align with modular strategic planning and systems integration role.	Strategy & planning Director (Scotland)	Transport Scotland, all TOCs and FOCs operating in Scotland, and Route Business Scotland	*March 2018 and ongoing*
8	**R:** Failure to link the network strategic plans with the wider industry planning processes leads to required information not being available to specifiers to inform their choices and **poorer outcomes** for the end user.	Develop a wider industry planning work stream with Governments.	Policy & Programmes Director	All TOC and FOC customers, funders and stakeholders	*Commenced and ongoing*

Note: the assessment of the risk outcome is based on professional judgement – 'N' outlines net (current) position, 'T' outlines target position (after actions outlined above).



Summary of risk outcome
Feedback from funders, passenger and freight operators has challenged us to;

1. Put the needs of passengers and freight end-users more obviously at the heart of our strategies and plans.

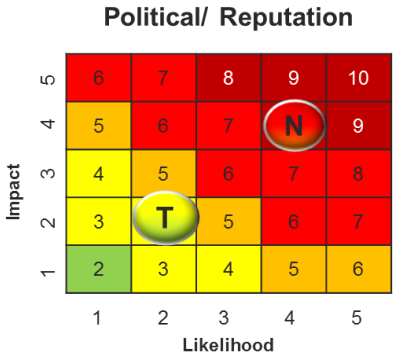
2. To adopt an approach that is more flexible to timing needs of all potential funders in an increasingly diverse environment of funding and service specification.

4.5f(i) Managing output change – franchising

Summary of objectives	An enhanced role for Network Rail in the franchise competition process in order to better inform the development of the franchise specification, align objectives and encourage more track and train collaboration so that the railway delivers for passengers.

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
1	**O:** Secondment of System Operator team into competition teams will enable **better alignment** between franchise specifications and Network Rail commitments and capabilities. This alignment will enable more joined up industry focus and **better outcomes** for passengers.	Resource a team of four franchising professionals who will be embedded into franchise competition teams, with each team member leading on approximately two sequential franchise competitions during the Control Period.	Policy & Programme Director	Franchising Authorities, TOCs and NR Route Businesses	Throughout CP6
2	**O: Supporting franchise specifiers** to develop franchise specifications at a much earlier stage than previously will enable **better alignment** between franchise specifications and Network Rail commitments and capabilities.	The System Operator will work with franchise competition teams from the very beginning of the franchising process to inform the Invitation To Tender specification and sign off as appropriate.	Strategy & Planning Director (W&W) & (Scotland)	Franchising Authorities, TOCs and NR Route Businesses	Throughout CP6
3	**O:** Holistic **engagement** of Network Rail in the **competition process**. This will enable better alignment and better outcomes for passengers.	Involve all relevant parts of the business, especially Route Businesses, Safety, Technical & Engineering, and Digital Railway, in the competition process from the very beginning to help shape the best outcomes for funders, operators and passengers.	Strategy & Planning Director (W&W) & (Scotland)	Franchising Authorities &, TOCs	Throughout CP6
4	**C:** Resource levels are planned around existing franchise programmes. If this changes there may be **insufficient resource** available leading to sub-optimal outcomes.	This may be a constraint if the franchise programmes change resulting in compression of the same activity or more activity itself.	Strategy & Planning Director (W&W) & (Scotland)	Franchising Authorities, TOCs and NR Route Businesses	Throughout CP6
5	**R: Insufficient funding** to carry out all of these planned activities.	Prioritise activity around available resources, instead of developing a team of franchising professionals, plus take more of an advisory instead of deep rooted role in franchising competition teams.	Strategy & Planning Director (W&W) & (Scotland)	Franchising Authorities, TOCs and NR Route Businesses	Throughout CP6 with impacts into CP7 and beyond

Note: the assessment of the risk outcome is based on professional judgement – 'N' outlines net (current) position, 'T' outlines target position (after actions outlined above).



Summary of risk outcome
The System Operator's Strategic Business Plan for CP6 sets out a step change in the way Network Rail supports the franchise competition programme for the benefit of funders, operators and passengers. Sufficient funding will deliver these benefits.

4.5f(ii) Managing output change – event steering groups

Summary of objectives	Throughout the remainder of CP5 we will undertake a project to improve the functioning of Event Steering Groups (ESG). The project will develop and implement a Code of Practice (CoP) defining input quality for ESGs, implementation and project timescales. The CoP will be supported by a competency framework defining the capabilities required of ESG attendees to ensure the right level of stakeholder engagement in ESGs is provided across the industry.

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
1	**R:** The constitution of an 'Event' and its potential impact on timetable change is not understood or defined across the industry resulting in **poor management** of timetable change and **lost benefits** that should be realised through the timetable.	Guidance and definitions to be provided in a Code of Practice, End to end industry planning processes developed and communicated to stakeholders to provide understanding of when they must consider timetable change and form an ESG.	Head of Planning	All TOCs/FOCs	Yr 1 CP6
2	**R:** ESGs are **poorly or inappropriately attended** leading to underutilisation of the forum as the means to effectively manage timetable change arising from an 'Event'.	Develop ESG competency framework to define capability of ESG attendees. Develop ESG process map and RACI to ensure clear communication to industry stakeholders of when and what is required to manage change effectively. Establish an appropriate escalation mechanism in the event of a shortfall in ESG attendance.	Head of Planning	All TOCs/FOCs	Yr 1 CP6
3	**O:** Efficient functioning of ESGs would lead to better **management** and **forecasting of timetable change** and the ability of capacity planning to resource and plan for Events' impact on timetable production.	Development of an ESG Code of Practice. Ensure the implementation of the Code of Practice to current and future ESGs	Head of Planning	All TOCs/FOCs	Throughout CP6

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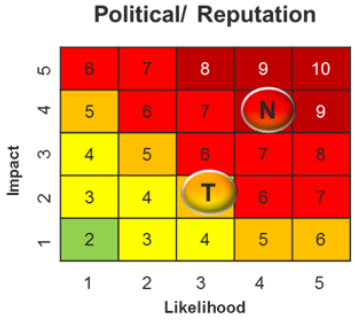

Summary of risk outcome
The risk of 'Events' not being managed or transitioned effectively into the timetable through the efficient functioning of ESGs and the consequent impact on unrealised benefits and late timetable change is high unless the proposed interventions are implemented.

4.5f(iii) Managing output change – development

Summary of objectives	Create a network-wide client capability which is able to lead the development of government sponsored schemes, seek funding for externally financed or funded schemes and support the introduction of wholly contested third party schemes which meet network strategic and local plans.

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
1	**R: lack of a clear early stage development process** results in an inability to prioritise schemes an effectively make trade off recommendations to governments.	Put in place an early project development process which: • is clear, unambiguous and accessible for third parties; • is aligned and compatible with the Memorandum of Understanding (MOU) frameworks; • enables recommendations about priorities and trade-offs to be made in an open and transparent way. Continuously improve the process through feedback and experience.	Strategy and Planning Director (South), Policy & Programmes Director	All routes, TOCs, FOCs, DfT, TS, and external funders	Process in place by start of CP6
2	**R: lack of a clear early stage development process** (or an overly complex one) results in an inability to attract external funding to the railway.				
3	**R: Scale, scope and complexity of change** across the industry, spanning construction programmes, franchise changes and Control Periods makes effective integration impossible, undermining HS2 benefits realisation.	Active engagement in existing 'One Railway' Integrated Decision and Interface Plan and supporting governance. Develop and own 'One Railway Integration Plan', incorporating an outputs and benefits framework for the integration of high speed services on the conventional rail network that is aligned with HS2 Limited. Scope and prioritise integration workstreams as part of that plan in collaboration with route and business leads, DfT and HS2 Limited, with governance through established Sponsor and Programme Boards.	HS2 Integration Director	All Routes, TOCs & FOCs, DfT, HS2 Limited	Throughout CP6
4	**C**: Sizing of HS2 Integration team is based on the principle of a **small, focused 'client'** organisation to own, manage and co-ordinate the integration plan, with plan deliverables and business change owned across the business and stakeholder organisations.	Develop and own 'One Railway Integration Plan'. Scope and prioritise integration workstreams as part of that plan in collaboration with route and business leads, DfT and HS2 Limited, with governance through established Sponsor and Programme Boards. Support efficient and lean delivery through development of structured continuous improvement plans.	HS2 Integration Director	LNW, LNE & EM, Scotland and Western routes, DfT, HS2 Limited	Throughout CP6
5	**O**: **Demonstrate** and reinforce Network Rail's System Operator role in the **integration** of and planning for new lines.	Support and drive Network Rail's leadership of the timetable development processes including interfaces with other networks and new lines. Establish and agree principles for System Operator functions and how they will be carried out in relation to new lines.	HS2 Integration Director	DfT, HS2 Limited	Throughout CP6

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
6	**O: Improve quality** of industry decision-making through the System Operator being able to take an integrated, **whole-system view**.	Extend the scope and quality of System Operator analysis to inform industry decisions, particularly in early stage project development, delivering improved outcomes and cost savings.	Head of Analysis & Forecasting, Strategy & Planning Directors	Throughout CP6	

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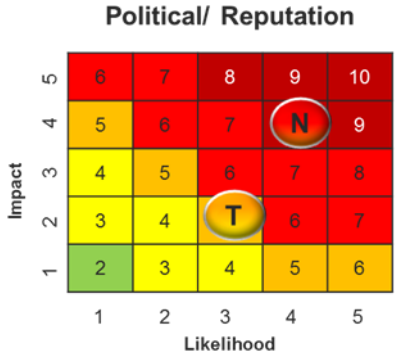

Summary of risk outcome

The System Operator's Strategic Business Plan for CP6 sets out a step change in the we will deliver our client accountabilities and develop a framework for early stage project development that allows funders to engage in a straightforward manner. Our 'One Railway Integration Plan' will enable effective integration of HS2 and the existing network.

4.5g Managing the access rights frameworks

Summary of objectives	Develop the access rights framework and tools to support routes and customers in their capacity allocation discussions, develop policies to manage the capacity challenges, and promote relevant changes to industry codes and regulatory approaches to enable the best overall allocation of capacity in access agreements.

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
1	**O:** Develop approaches that support the routes' work with operators on applications and **inform potential regulatory directions** for access agreements.	• Develop Sale of Access Rights (SoAR) framework, and narrative descriptions of relevant trade-offs. • Improve information available to support capacity allocation decisions by ORR, influence DfT/TS. • Establish programme of communications and capabilities – including potential workshops / conferences and awareness of regulatory matters.	Policy & Programmes Director	TOCs/FOCs, applicants, routes DfT / TS, and ORR	Throughout CP6
2	**O:** Advance policies for **improving / guiding allocation** of scarce capacity such as strategic reservation and congestion areas.	• Propose changes to processes, decision criteria, network codes and industry / business rules to enable planning and access frameworks to evolve and support the needs of the wider industry.	Policy & Programmes Director	TOCs/FOCs, applicants, routes DfT/TS, and ORR	Throughout CP6
3	**O:** To **improve realisation** of capacity benefits from investment to sale of access rights.	• Develop processes to track impact of investment and allocation decisions which interact with each other. • Deliver recommendations arising from the End to End planning process review.	Policy & Programmes Director	TOCs/FOCs, applicants, routes, funders, ORR, ADC, CRC	Throughout CP6
4	**O:** To be **proactive** in the identification of **potential capacity** sales and highlight these to industry.	• Establish an activity plan of identifying capacity opportunities within the timetable for delivery by the Capability & Capacity analysis team.	Capacity Planning Director	All	Throughout CP6
5	**C: Scope of control** - agreements are directed by the ORR, the industry decision criteria set and network code by the Class Representatives Committee, with disputes reviewed by Access Disputes Committee.	• Industry leadership (e.g. RDG Access Rights Group) working to industry to propose changes to Network Code. • Improve quality of advice / information for ORR. • Review level of input into disputes.	Policy & Programmes Director	TOCs/FOCs, applicants, routes, other IMs, ORR, ADC, CRC,	Throughout CP6
6	R: Capacity sales being agreed against System Operator advice, leading to **inability to make best use of capacity** and potential erosion of benefits associated with enhancements.	• Deliver above actions.	Policy & Programmes Director	All	Throughout CP6

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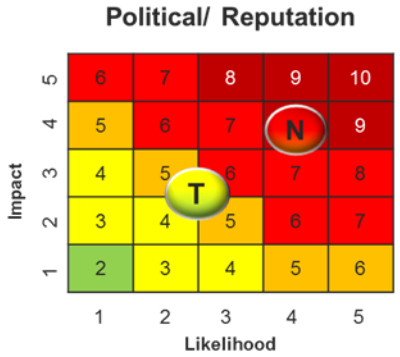


Summary of risk outcome

We are improving the processes for deciding the best allocation of capacity and the quality of information used; the processes are supported by proactive developments of policies that enable us to meet capacity challenges and deliver as necessary.

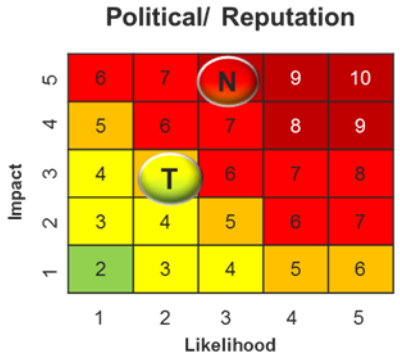
4.5h Production of the timetable

Summary of objectives	Every day, we work closely with passenger and freight operators to make sure the timetables allow trains to run safely on our network at their published times. The objective of these measures are to monitor train planning processes to ensure timely delivery of timetable plans to industry partners, passengers and freight users.

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
1	C: Fixed sized train planning organisation, highly dependent upon the **skills and knowledge** of individuals within the workforce.	Cyclic recruitment programme of operational planning assistants, improve competency framework to allow Network Rail to closer match the market rate for top performing staff. Incremental enhancements to our timetable planning systems with the objective of high levels of automated conflict detection. Continue driving Working Timetable (WTT) development through clear project controls, including network level resource planning for the WTT production. Move planners between production teams as necessary to safeguard delivery of the WTT.	Head of Timetable Production	All Routes, TOCs and FOCs	Throughout CP6
2	R: Capacity for the timetable planning team to cope with **changes and rework** of the plan for infrastructure change, rolling stock cascades or new franchises.	Focus on continuous improvement projects. Review of the effectiveness of ESG processes and governance. Monitoring of late notice changes to the engineering access plan. Improving the capacity within the team to deliver capacity studies. Develop clear understanding of the risk profile of key enhancements, and provide the best response as required by individual circumstances.	Head of Timetable Production	All Routes, TOCs and FOCs	Throughout CP6
3	O: Limited control of the **quality and volume of inputs** from TOCs and FOCs into the timetable process. Sufficient capacity not available with the fix sized teams to validate all incoming train schedules.	Introduction of bid quality code of practice and bid quality measures. Feedback to operators around the quality of their inputs into the process, with visibility of compliance levels of other operators. Use of continuous improvement tools and practice to reduce non value add activity / rework within the planning process.	Head of Timetable Production	All Routes, TOCs and FOCs	Throughout CP6
4	O: The competing objective of trading capacity for performance or vice versa increases the **complexity of decision making.**	Greater alignment of strategic planning activity and timetable development through capability & cap\city analysis. Review of timetable planning rules to ensure the timetable is built on robust values. Improve the teams' understanding of Part D of the network code and knowledge of track access contracts. Better alignment between the long term planning process, Event Steering Groups and the development period of the production timetable.	Head of Timetable Production	All Routes, TOCs and FOCs	Throughout CP6

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
5	R: A failure to properly **understand the assumptions** around the strategic plans and the impact this will have on potential overselling of capacity.	Better alignment between the long term planning process, Event Steering Groups and the development period of the production timetable. Increasing the capacity to delivery of advance timetabling work aligned to ESG project plans.	Head of Timetable Production	All Routes, TOCs and FOCs	Throughout CP6
6	R: **Timetable systems** and data capability do not evolve at the pace of industry changing use of technology.	Via the Data Improvement Programme, development of data strategy and platform which includes cross industry policies and frameworks. Alignment of timetable planning systems with availability of a single infrastructure capability model (working alongside other corporate functions). Capability for data rich versions of the timetable and a single version of accurate data attributes which are critical to developing high performing timetables.	Head of Timetable Production	All Routes, TOCs and FOCs	Throughout CP6
7	C: The risk appetite for change impacting industry **timetabling processes** or technology is very low.	Regular engagement with the planning community via the Operational Planning Strategy and Practitioner Groups, aligning activities to industry priorities such as RDG 'better timetables'. Influence into future franchises to encourage Operator adoption of developed data and applications.	Head of Timetable Production	All Routes, TOCs and FOCs	Throughout CP6

Note: the assessment of the risk outcome is based on professional judgement – 'N' outlines net (current) position, 'T' outlines target position (after actions outlined above).



Summary of risk outcome
We are managing timetable production within risk appetite however, managing within reputation appetite is more challenging. We use readiness planning and regular delivery review against plan meetings for each new working timetable or bank holiday amended timetable development periods to mitigate risk levels.

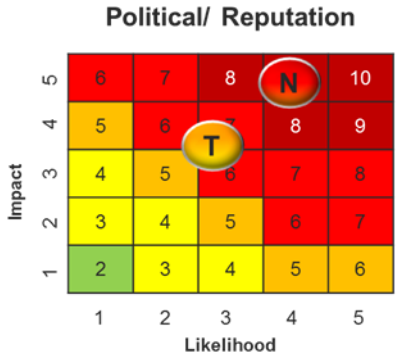
4.5i Improvement programmes

Summary of objectives	Overall functional improvement programmes to deliver for our customers.

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
1	**C**: **Insufficient funding** in CP5 to undertake feasibility work to business case standard to detail full costs and benefits. Failure to deliver performance benefits might result from this.	Exploring options to use what funding is currently in budget to enable scoping of costs and benefits and development of feasibility activity. Implement the System Operator Delivery Board, providing governance for programme activity within the System Operator, overseeing appropriate development of programmes, risk management, and decision making capability for capital expenditure.	Programme and Support Services Director Policy and Programmes Director	Route Businesses & TOC/FOCs	CP5
2	**R:** Funding not made available to **deliver programmes** due to benefits returning directly to System Operator being negligible. Benefits, particularly where **timetable robustness** is at stake (and timetable planning delay benefits) if businesses cases do not factor in schedule eight values.	Programme funding proposals will include an estimate of the value of tier two benefits in their business cases. A conversation with Route Businesses about their willingness to contribute to the costs of programmes will follow and a trade-off can be made.	Programme and Support Services Director	Route Businesses & TOC/FOCs	Beginning of CP6
3	**O**: Customer feedback has identified the opportunities where we can **improve our service** offering. We are developing a portfolio of improvement programmes designed to deliver improvements to our people **capability**, and our **core systems** and **processes** across the system operator.	We are structuring our portfolio around the three themes of people, processes and systems. • In developing our people we will focus on client capability; professionalising strategic planning and train planning careers; continuous improvement; and strengthening our broader leadership and management capabilities. • The end to end planning programme has identified improvements to our overall operational model and sub processes, such as whole system integration and strategic planning. A key element of this programme is to embed robust benefits tracking, and improving feedback from timetable delivery upstream to our early strategic planning processes. • We are developing an investment and change programme to enhance our system capability in key areas of whole system modelling; better access planning; and enhanced train planning capability	Policy and Programmes Director Capacity Planning Director	Route Businesses; TOCs/FOCS; Funders (such as DfT, TS, and regional bodies).	Throughout CP6

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Customers & Stakeholders impacted	Timescale (start/ finish)
4	**R**: The proposed changes to **people, systems and processes** do not deliver the anticipated benefits.	We will use the MSP4NR framework to track benefits realisation, and have in place a robust and joined-up governance framework across the System Operator. Identification and delivery of further related change activities to tackle causes of failure to deliver the anticipated benefits.	Policy and Programmes Director Head of Production Development	Route Businesses; TOCs/FOCS; Funders (such as DfT, TS, and regional bodies).	Throughout CP6
5	**C**: Improvements in processes require change in turn to **industry processes** and impact on accountabilities that are outside of our direct control.	We will ensure effective engagement takes place with the industry as part of the System Operator Advisory Board.	Policy and Programmes Director Capacity Planning Director	Route Businesses; TOCs/FOCS; Funders (such as DfT, TS, and regional bodies).	Throughout CP6

Note: the assessment of the risk outcome is based on professional judgement – 'N' outlines net (current) position, 'T' outlines target position (after actions outlined above).



Summary of risk outcome
Our overall improvement portfolio and the robust management of the programmes within it will enable us to deliver in accordance with our customers' requirements.

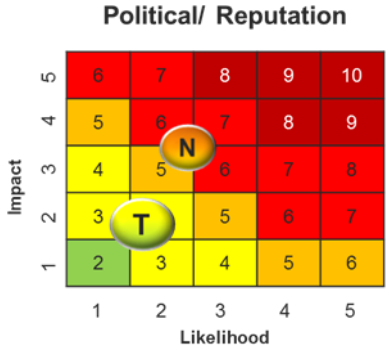
4.5j Delivery for customers

Summary of objectives	Our organisational structure will deliver for our customers. Their needs and priorities will inform our strategic plans and be included in our measurement systems throughout CP6 to demonstrate delivery and facilitate their holding us to account.

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Timescale (start/ finish)
1	**O:** Align CP6 vision, deliverables and activities with the requirements and **priorities of stakeholders** to demonstrate the delivery of the System Operator for its customers.	Our SBP has been developed following an extensive stakeholder consultation to determine their needs, priorities, and also preferences in the way that the System Operator measures its outputs. Ongoing consultation with stakeholders will be undertaken throughout the periodic review to maintain this alignment and react to emerging strategic priorities.	Programme Director	Commenced and ongoing
2	**R:** A lack of clarity in scorecard structure and/or lack of robust measures at local level leads to inability to **demonstrate delivery** of customer priorities.	System Operator scorecards throughout CP6 to be accompanied with an annual narrative to contextualise the indicators. Route System Operator structure to continue to engage with stakeholders to develop a suite of local measures. An annual process of refreshing the Route System Operator Scorecard to reflect the emerging needs and priorities of stakeholders will be implemented.	Programme Director Principal Strategic Planners	Throughout CP6
3	**O:** Increase clarity in governance and **customer confidence** in how the System Operator is held to **account** for its delivery.	Implement a governance framework, headed by the System Operator Advisory Board accountable for the approval of the annual business plan, annual narrative report and challenge to the System Operator functional scorecard.	Principal Policy Lead	December 2018
4	**R:** The System Operator is unable to adapt to a **change in priorities** of customers and stakeholders during the Control Period, leading to an **inability to deliver** for its customers	Implement continuous modular strategic planning processes, increasing agility of strategic planning. Include delivery of customer priorities on measurement systems throughout the function with stakeholder consultation annually.	Strategy & Planning Directors	Yr 1 CP6
5	**R:** A lack of effectiveness or engagement in measuring **customer advocacy** leaves the System Operator unable to determine the success of its delivery to customers.	Design a framework to measure customer advocacy which will inform our structured continuous improvement initiatives, and measure the System Operator's effectiveness in both what it delivers and how it delivers for its customers.	Programme Director	Yr 1 CP6
6	**R** The use of **quantitative measures** to demonstrate delivery to customers without accompanying **qualitative assessment** results in delivery of outputs at lower levels of quality.	Include within the customer advocacy a framework of measures which allow the System Operator's customers to indicate their opinion of the quality of its outputs, informing the annual narrative report content.	Programme Director	Yr 1 CP6
7	**R:** A lack of clarity of System Operator **outputs and accountabilities** leads to inconsistent customer perception of System Operator deliverables	Socialise the System Operator operational model with the industry, providing clarity of accountabilities throughout. Implement and outline the new governance framework.	Principal Policy Lead	December 2018

No.	Key constraints (c), risks (r) and opportunities (o)	What we plan to do	Owner	Timescale (start/ finish)
8	**O:** Provide **greater analysis contributions** to industry decision makers, particularly surrounding project development	Engage with funders to establish how the System Operator can play an enhanced role in providing analytical services to inform decisions	Head of Analysis & Forecasting, Strategy & Planning Directors	Ongoing

Note: the assessment of the risk outcome is based on professional judgement – 'N' outlines net (current) position, 'T' outlines target position (after actions outlined above).



Summary of risk outcome
Following an extensive stakeholder consultation exercise to inform the development of the System Operator SBP, we are confident in our plans for delivering our customer's needs and priorities. Ongoing consultation with our customers will continue to inform how this delivery is demonstrated. Delivery of control actions and enabling continuous improvement of our outputs, governance and reporting frameworks will further mitigate any reputational risk exposure.

5. Expenditure & efficiency

5.1 Cost and volume summary

Figure 5.1 Expenditure (post headwinds and efficiencies in 17/18 prices)

Unit of measure		CP5						CP6						CP7
		14/15	15/16	16/17	17/18	18/19	CP5	19/20	20/21	21/22	22/23	23/24	CP6	24/25
Business Application Renewals (capex – contained within RSIT plan, demonstrated here for visibility)	*£m*						*26.1*	*3.5*	*4.5*	*4.2*	*3.9*	*4.5*	*20.6*	*4.5*
Business Improvement (capex)	**£m**							7.7	12.3	21.1	13.3	6.2	60.6	
Controllable opex	**£m**	22.4	25.1	21.2	24.0	23.5	116.2	41.3	41.9	42.6	43.0	42.2	211	42.2
Non-controllable industry costs	**£m**		0	0	0	0	0	0	0	0	0	0	0	0
Total	**£m**	**22.4**	**25.1**	**21.2**	**24.0**	**23.5**	**116.2**	**49.0**	**54.2**	**63.6**	**56.3**	**48.5**	**271.6**	42.2
Permanent Headcount		411	652	674	659	693	693	826	832	831	829	818	818	818
Agency		0	0	0	0	0	0	0	0	0	0	0	0	0
Total headcount		**411**	**652**	**674**	**659**	**693**	**693**	**831**	**832**	**831**	**829**	**818**	**818**	818
Headroom (held by Network Rail centrally)		0	0	0	0	0	0	1.0	1.0	1.0	1.0	1.0	5.0	0

We do not want to be in a position where we have to re-plan our activity every time a risk materialises in CP6 as this would be very inefficient. Therefore, our strategic plan includes £5m of headroom, which has been created by holding back some SoFA funding from Network Rail's overall CP6 plan. This route headroom is particularly for the business performance risk we face in the control period.

Ideally, actual results will be in line with our CP6 plan and we will be able to release our headroom to invest it in improving the railway – this headroom can be considered as contingent investment.

If needed, we will also have the opportunity to access portfolio headroom in CP6, particularly for inflation risk. Again, we will ideally spend this on further investment to improve the railway. Portfolio headroom will be controlled through our corporate business planning process. Increased investment will depend on successful delivery of the company's plans and good business cases.

5.1.1 Headcount changes

The headcount in CP5 shows an increase due to:

- the transfer of the Capacity Planning team from Network Operations into the Network Strategy and Capacity Planning function in the early part of the control period;
- Recruitment of additional operational planners for higher volumes of enhancement work and associated re-work (e.g. Western electrification);
- the increase in the programme development teams for funded programme development (e.g. Crewe Hub);and
- the implementation of the System Operator fit for the future reorganisation to allow us to respond fully to political and Network Rail devolution and the requirements of our customers.

Costs in CP5 fluctuate due to the above changes and the changes in recoveries associated with programme development work.

The increase in headcount from CP5 into CP6 is driven in the following areas.

- Additional resource (3 heads) to enable delivery of the requirements of the Scottish HLOS including whole system client capability.
- Additional resource to strengthen our input into the franchise specification process (4 heads).
- Additional resource in strategy & planning, capacity planning and policy and programmes (9 heads) in order to support the recast of the West Coast Main Line timetable associated with the implementation of HS2.
- Additional resource to develop HS2 associated works (16 heads) fully funded by HS2.
- Additional resource in capacity planning to accommodate the increase in activity associated with the forecast calendar of events, the increasing complexity of the operational environment as the network becomes more congested and additional activity associated with political devolution. This leads to an increase of more than 60 heads, mainly planned to be recruited in 2018/19, with all in post by the first year of the control period. This will reduce to an additional 32 heads on the CP5 base in the final year due to efficiencies that will be delivered through continuous improvement and the implementation of the capex investment programme.
- Programme management resource to deliver the capacity planning opex and capex improvement plans (10 heads);
- Additional resource to provide greater capacity and timetable performance analysis capability using Railsys (5 heads)
- Additional resource to support an extended scope of analysis activities (29 heads)
- Removal of vacancy gap assuming full population of organisational structure is required to deliver in CP6, inclusion of a graduate programme and the removal of secondees associated with HS2 integration.

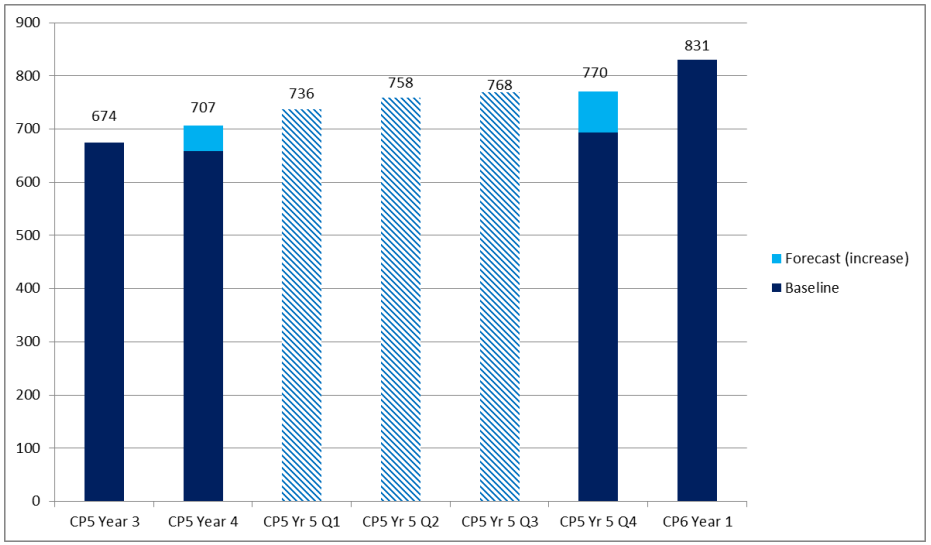
5.1.2 Deliverability

The System Operator fit for the future programme provided an opportunity to adjust our CP5 baseline position (outlined in Figure 5.1) to enable us to respond to changes in the railway environment. With our network wide role being more important than ever before, structural changes within our organisation were necessary to meet the needs of our customers.

Throughout the last year of CP5, subject to funding, we will continue to strengthen our organisation. We will undertake recruitment earlier than CP6 Year 1, providing a mechanism of moving from our current organisational size to our planned CP6 resource levels as demanded by the volume of timetabling activity anticipated. This activity will enable confidence in the delivery of our CP6 plan.

The strengthening throughout CP5 Year 5, demonstrated in Figure 5.2 in quarters, will see ongoing investment in Capacity Planning both in the size of the team, and the way in which capabilities demonstrated against our competency framework are rewarded. We anticipate this recruitment and investment will support continued retention in Capacity Planning, and additionally enable us to achieve our CP6 plan.

Figure 5.2 Headcount volumes from CP5 Year 3 to CP6 Year 1



Remaining recruitment between CP5 Year 5 and CP 6 Year 1 will be undertaken to support the expanded role of analysis, advanced timetable capability, a strengthened role in franchising and to undertake the activities in support of the WCML timetable changes to integrate HS2.

5.1.3 Cost methodology

The change in cost from CP5 to CP6 is driven by the increases in headcount described above, which are required to deliver the additional volumes and scope of works in CP6. Costs for the additional headcount have been derived using Network Rail transparent pay principles.

Costs associated with business application renewals and maintenance of our existing IT systems have been calculated by Route Services Information Technology (RSIT), and included within their plan. They are included here for visibility, without affecting totals.

We have reviewed areas where we believe investment would benefit both Network Rail and the wider industry. High level scopes of work have been established for the identified areas of investment based on previous experience and costs for information management (IM) programmes, inputs from procurement and RSIT in order to create provisional costing.

As we progress development on the programmes of work we will have a clearer view on the final cost and scope of each programme and will review the strategic objectives of the change programme in order to prioritise changes in CP6.

Figure 5.3 Summary of costs by team or activity within the function

Activity/team	CP6 total (£m)*	Comments
Director	10	Includes costs of training and development for the function.
Strategy & Planning (Scotland)	8	Includes delivery of Scottish HLOS requirements. Substantially delivers in Strategic Planning and Managing Output Change elements of our operational model.
Strategy & Planning (North)	18	Incorporates additional HS2 associated activity, including WCML timetable recast work. Substantially delivers in Strategic Planning and Managing Output Change elements of our operational model.
Strategy & Planning (Wales & Western)	11	Substantially delivers in Strategic Planning and Managing Output Change elements of our operational model.
Strategy & Planning (South)	17	Substantially delivers in Strategic Planning and Managing Output Change elements of our operational model.
HS2 Integration	5	Substantially delivers in the Managing Output Change element of our operational model.
Capacity Planning	161	Split by £106m opex and £55m capex. Delivers across the operational model via analysis and capability work, and fully delivers production of the timetable.
Policy & Programmes	42	Split as £36m opex and £6m capex. Supports delivery across the operational model.
Total	**272**	

*summation discrepancies due to roundings.

5.2 Route Business Scotland details

Figure 5.4 Route Business Scotland details

	CP5 Year			CP6 Year					CP6 total
	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	
National Cost (£m)				49.0	54.2	63.6	56.3	48.5	271.6
Scotland Cost (£m)				5.8	6.3	7.3	6.6	5.6	31.6
Scotland (%)				12%	12%	11%	12%	12%	**12%**
Basis for allocation to Route Business Scotland	Headcount supporting Scotland teams, and central teams/capex split by route miles								
Activity	**Please refer to Section 3a.6**								

5.3 Cost drivers, headwinds and efficiency

Figure 5.5 Summary of cost changes between CP5 and CP6 (opex)

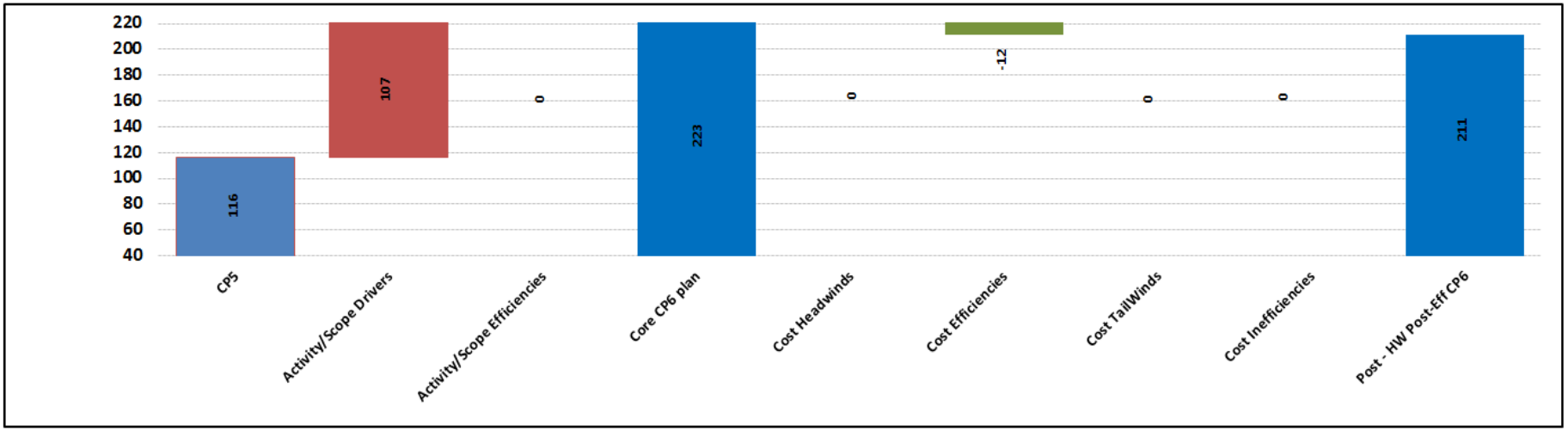
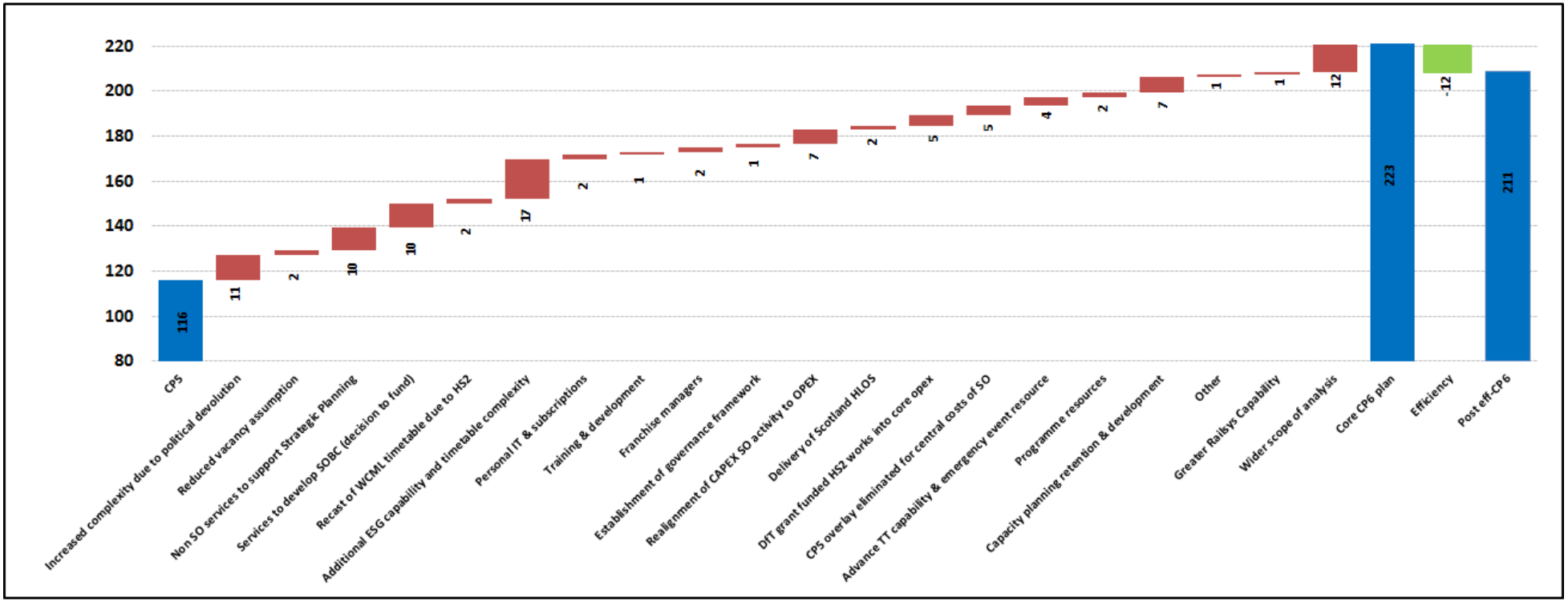


Figure 5.6 Detail of cost changes between CP5 and CP6 (opex)



The above waterfall plots are focussed on our opex activity. This is due to the holding and reporting of renewals and investment activity within Network Rail changing between CP5 and CP6.

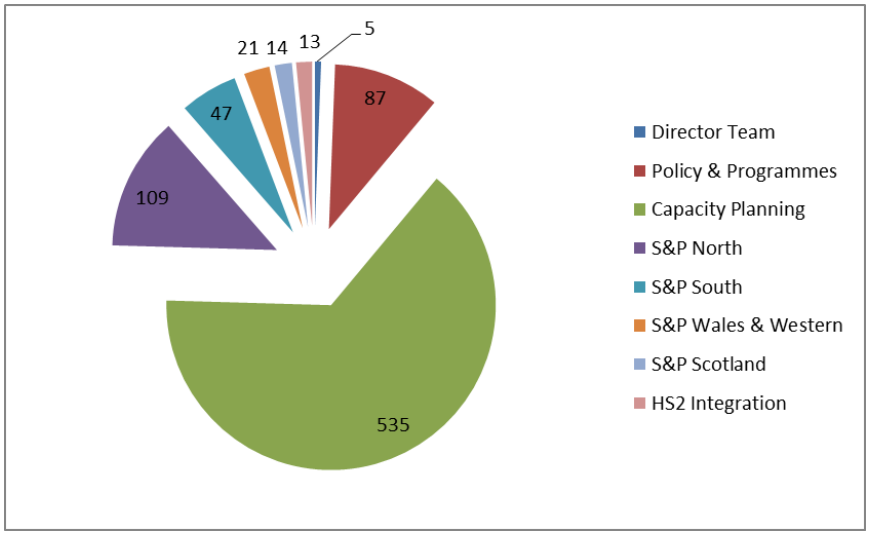
5.3.1 Activity / scope drivers

The structure and size of the System Operator, along with its activities and accountabilities is not comparable to any previous body. The headcount profile of the organisation (Figure 5.7) is heavily driven by the delivery of timetabling activity, which remains a resource demanding and manual task.

A more diverse train service specification and industry funding environment, combined with the increasing need to identify private sector funding opportunities leads to an increase in the quantity of strategic planning activity that will be required in order to deliver quality information to inform decisions in a timely manner.

We will also need to align the development of our strategies with the differing timescales of our stakeholders' needs. A significant amount of this work will be delivered by the strategy and planning teams, although there is also an increase in the quantity of capacity analysis that will be required.

Figure 5.7 Headcount overview (CP6 Year 1)



Within CP5, we have been able to deliver our accountabilities without full recruitment against our organisational structure. In CP6 we have assumed that full population of our organisation will be required to deliver our customers' requirements, and a 1% vacancy gap is represented in the function's operational expenditure.

Within CP5, to enable the development of programmes of work within the long term planning process, the CP6 Development Fund (ring-fenced capex fund) was drawn down on. This allowed expertise external to the System Operator to be used to inform the Route plans (for example early stage estimating). We have assumed that this cost is to be covered in our core opex in order to give steady and timely input into our strategic planning activities.

In addition, in order to operate in accordance with the Memorandum of Understanding with DfT and to apply its principles with other funders, programmes of work require a Strategic Outline Business Case (SOBC) to inform a decision to progress from a funder. There is additional activity required to develop a programme of work from the stage of maturity associated with strategic planning outputs to that required to develop a SOBC. The costs of this additional work have now been included within our core opex, whereas in CP5 they would have been funded via the capex CP6 Development Fund.

A substantial piece of work that will need to be undertaken in CP6 is the re-cast of the WCML timetable in order to deliver the optimum outcome for the network from the HS2 programme. This will require additional resource across the function compared to that required in CP5.

We will establish a team of franchise managers to strengthen the Network Rail input into franchise specifications so that they are deliverable, this includes provision of a formal Network Rail input and positions to the proposed Expression of Interest, Invitation to Tender and the bid evaluation.

The Scottish HLOS expresses specific requirements of us which we will deliver against in CP5, particularly that to deliver a whole system client role which will require additional resource in CP6. This will reflect the principles of partnership working and be broadly aligned with the principles of Strategic Business Case development in accordance with requirements set out by Scottish Ministers.

There is an increase in resources required specifically in capacity planning in order to manage the Calendar of Events that is forecast for CP6. There has proved to be insufficient headcount in Capacity Planning for the actual volume of planning work, and there is forecast to be significantly more activity than in CP5 and our customers' feedback is that this process needs to be more transparent and robust in order to address their requirements.

Timetable changes have become more resource hungry as the increasing utilisation of the network increases the complexity of the development activity required to be undertaken.

There is now a centrally held training and development fund in order to deliver the improvements in capability required for delivery in CP6. This

includes a graduate training scheme.

We are implementing a governance framework as described earlier in the document and also a framework to appropriately measure customer advocacy in a way that can drive improvements in our behaviours. There are costs associated with both of these activities that are included in our plan.

In CP5 we have supported the delivery of a number of projects, both in Capacity Planning and Strategy & Planning teams, requiring capex funding to support the activity, albeit that the activities undertaken fall within the accountabilities of the System Operator. Accordingly, in CP6 we have included such activity within our opex base to enable the System Operator to deliver and react to emerging needs without being constrained by having to act on solely chargeable activities.

There is an increase to the baseline costs of our programme resource base and capability, particularly within the Capacity Planning function to support the activity described later in the document. These costs are outlined in full within Chapter 8.

Capacity planning requires an uplift in operating costs to deliver and implement its structured retention and development plan as outlined in Chapter 6. This includes the development of technical career paths as far as senior technical leader roles and reward mechanisms related to attainment of capacity planning competencies.

Our plan to extend the scope of analysis undertaken by the System Operator requires greater levels of resources (and associated supporting costs).

5.3.2 Efficiency

As with the rest of Network Rail, the System Operator function recognises the need to demonstrate strong progress in achieving efficiencies during the remainder of CP5 and throughout CP6.

During CP5 the organisation has undergone a significant re-organisation in order to be better able to meet the needs of its customers and to do so more cost-effectively.

A more cost effective System Operator function is already being delivered in CP5. A key aspect of this has been to seek to reduce our reliance on external consultants and use more internal resource. This has the added benefit of greater retention of knowledge within the System Operator organisation but has required an increase in our headcount. This opportunity to be cost effective has been focussed on our analytical resources in our economics team, our station capacity team and in our capacity planning team. A key risk we continue to manage is the recruitment of capable, technically qualified staff to fill these roles.

Feedback from our customers has identified a number of areas where we need to enhance our service offer to them. To deliver this we must continue to increase the capacity of the function in certain areas, e.g. franchising support, enhancing the capability of our people and reviewing and improving our processes.

Our key challenge in CP6 in terms of efficiency is to enhance our productivity rather than reduce costs. Reducing costs can only be achieved by reducing headcount in our function and, generally, we do not propose to do this given our customers are demanding more from us.

Our key productivity gains will be through our structured continuous improvement programme. This will enable us to work in a more complex environment, whilst delivering enhanced outputs within existing resources.

We are also examining the opportunity to invest in technology that could deliver efficiency gains and headcount reduction towards the end of CP6. This is particularly focused in our capacity planning activities however the proposals are at an early stage of development.

Figure 5.8 Summary of System Operator efficiency

Totex (O,M,R)	CP5 Year			CP6 Year					CP6 total
	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	
Pre-efficient plan[1] (£m)	**21.2**	**24.0**	**23.6**	**42.6**	**43.7**	**44.9**	**46.1**	**45.7**	**223**
Activity/scope efficiencies (%)	0	0	0	0	0	0	0	0	0
Core plan (£m)	**21.2**	**24.0**	**23.6**	**42.6**	**43.7**	**44.9**	**46.1**	**45.7**	**223**
Head winds (%)	0	0	0	0	0	0	0	0	0
Efficiency (%)	0	0	0	3.2	4.2	5.0	5.7	7.4	5.1
Tailwinds (%)	0	0	0	0	0	0	0	0	0
Inefficiency (%)	0	0	0	0	0	0	0	0	0
Post-HW, post-Eff spend (£m)	**21.2**	**24.0**	**23.6**	**41.3**	**41.9**	**42.6**	**43.0**	**42.2**	**211**

Figure 5.9 Headwinds and efficiency by theme

Theme	Area	Description	Net % change
Workbank planning (4)	Efficiency (4a)		0%
	Tailwind (4b)		
	Inefficiency (4c)		
	Headwind (4d)	LTPP requirements are substantially greater than forecast – workload would be prioritised to delivery within existing headcount.	
Technology (5)	Efficiency (5a)	Investment in technology will generate efficiency opportunities.	0.4%
	Tailwind (5b)		
	Inefficiency (5c)		
	Headwind (5d)		
Commercial (8)	Efficiency (8a)		0%
	Tailwind (8b)		
	Inefficiency (8c)		
	Headwind (8d)	HS2 funding for on-network works is withdrawn – deemed highly unlikely. Strategic planning work associated with HS2 introduction is no longer separately funded (HS2 fund withdrawn). Costs included in core plan. Costs associated with developing transformational enhancements in CP6 assumed to be delivered via recoverable work.	
Other (9)	Efficiency (9a)	Delivery of efficiency through structured continuous improvement to address the more complex environment in which we operate	4.7%
	Tailwind (9b)		
	Inefficiency (9c)		
	Headwind (9d)		

[1] Note that pre-efficient plan is equivalent to core CP6 plan + 2a (activity/scope efficiencies) in the waterfall

5.3.3 Relevant benchmarks

In May 2017 we completed a reorganisation activity to be fit for the future and deliver for our customers in an increasingly devolved environment. This included responding to both political and operational devolution and considered the functions that the rail System Operator should encompass.

We are focussed in the latter stages of CP5 on fully understanding the priorities of our customers and how to deliver against them most appropriately. As the organisation matures we will consider how best to use benchmarking to inform our future structure, activities and accountabilities.

This will include benchmarking against other UK System Operators (not necessarily within the rail environment); and European and global rail and non-rail system operators.

5.4 Risk and uncertainty in the CP6 plan

Pre-efficient costs in our plan are based on current ways of working and productivity within the System Operator and include additional scope and outputs that are required to be delivered in CP6. We have used 2016/17 unit rates to develop our capital expenditure forecasts and CP5 exit rates for opex expenditure forecasts. Drivers of rate increases (headwinds/inefficiencies), or rate reductions (efficiencies/tailwinds), where there is a reasonable expectation they will occur, have been identified separately from the core CP6 plan.

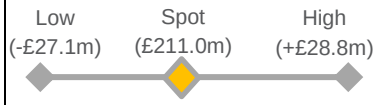
The combination of our core CP6 plan, headwinds/tailwinds and efficiencies/inefficiencies is our ‘submission’ and represents the ‘most likely outcome’ for CP6. The content of our plans reflect the funding that we understand to be available in CP6. We consider this plan to be realistic and, therefore, deliverable in CP6.

Whilst it is difficult to precisely estimate the likelihood of delivering our plan in CP6, the uncertainty ranges considered in developing our plan and assumptions outlined within Appendix B suggest that, overall, there is an 85% likelihood of the outputs in the plan being delivered for the forecast cost in our CP6 plan.

This means that there is a high likelihood that we will be able to deliver our plan for the forecast cost. The variation in the outputs that we are required to deliver, and the activity required to do so is described in the table below.

5.5 Uncertainty ranges for CP6

Figure 5.10 Uncertainty ranges

Area (S, O, M, R, Income)	Potential range (low – spot – high)	Summary of key drivers of the uncertainty range	
		Driver of range	**% of range**
Opex		Assume timetable activity and Calendar of Events (Appendix B) is accurate (+/- 9.46% on capacity planning).	+/-4.66%
		Potential vacancy gap greater than 1% across the organisation.	-2.44%
		Plans across the organisation are aligned and deliverable (+/- 4.7% on capacity planning)	+/-2.33%
		Resource planned for recoverable works is deployed on recoverable works for an assumed % of time (+19% on analysis and forecasting).	+1.32%
		Retention and development plan in capacity planning completes to current expected costs and outcomes (+3% on capacity planning)	+1.3%
		Continuous Modular Strategic Planning (CMSP) is able to increasingly deliver the outputs required for SOBCs) (-25 /+10% on strategy & planning SOBC costs).	-1.1/+0.57%
		The CP6 people and process change programme is deliverable within the core plan and the benefits are realised as expected (+/-8% on policy & programmes).	+/-0.59%
		The policy team is adequately sized (+/- 7% on policy & programmes).	+/-0.54%
		Uncertainty in level of franchising manager resource required (+7% on policy & programmes)	+0.54%
		More context specification requires significantly more resource to manage (+4.7% on analysis and forecasting).	+0.31%
		The MoU framework can be implemented with no further resource increases in the portfolio team or analysis & forecasting teams (+3% on policy & programmes).	+0.27%
		Uncertainty in HS2 resource external to System Operator required	+/-0.21%
		Impact of third party funding and financing proposals on analytical activity is uncertain (+3% on analysis and forecasting).	+0.20%
		Level of resource required to inform CMSP is correct (+/- 0.28% on capacity planning).	+0.14%
		Scottish HLOS activity can be delivered through the core plan (+/-2.9% on Scotland strategy & planning).	+/-0.06%
Total expenditure		See above opex ranges	

5.6 Enhancements

The Bowe review published in late 2015 recommended a move away from early funding commitments to projects to a more incremental approach that sees funding committed in stages as project development matures along with the understanding of cost and risk.

As a consequence the DfT's Statement of Funds Available (SoFA) for PR18 did not contain specific funding provisions for any individual projects and makes clear that funding for projects will be decided in an incremental way via a new pipeline process.

Underpinning this new process will be the need for projects to demonstrate a robust business case as they progress through development to delivery; value for money, affordability and deliverability will always be key considerations in deciding which enhancements to progress.

The DfT and TS are the primary, but not the only funders of enhancements and it is our intention to move to incremental investment decisions with all our funders.

Whilst this new approach is welcomed, the consequence is that the System Operator SBP must now be based on a set of assumptions about the level of funding available for enhancements in CP6.

These assumptions will be used to inform headcount requirements and associated operational costs. We have drawn on several areas in order to formulate our assumptions:

- System Operator work on route and market studies
- An ongoing dialogue with DfT around the Hendy commitment
- Initial Industry Advice (IIA) provided to the DfT and TS in January 2017 to inform their choices for investment
- Ongoing engagement with HS2 Ltd to understand the impact of HS2 on the current network
- Early development on Northern Powerhouse Rail in conjunction with Transport for the North
- Early development on Crossrail 2 in conjunction with Transport for London

Our assumptions are underpinned by a strategic view of what the network needs in order to provide a balance between performance, capacity and journey times on different parts of the network during CP6 so that the network is capable of operating safely and robustly in line with the demands upon it.

The on-going dialogue we have with our funders gives us a clear understanding of their strategies and priorities and these also have informed the development of these assumptions.

5.6.1 Incremental decision making for enhancements

Following the publication of the Bowe review Network Rail and the DfT agreed a Memorandum of Understanding that sets out the framework for incremental decision making on enhancements.

There are three key decision points for enhancements projects in this model:

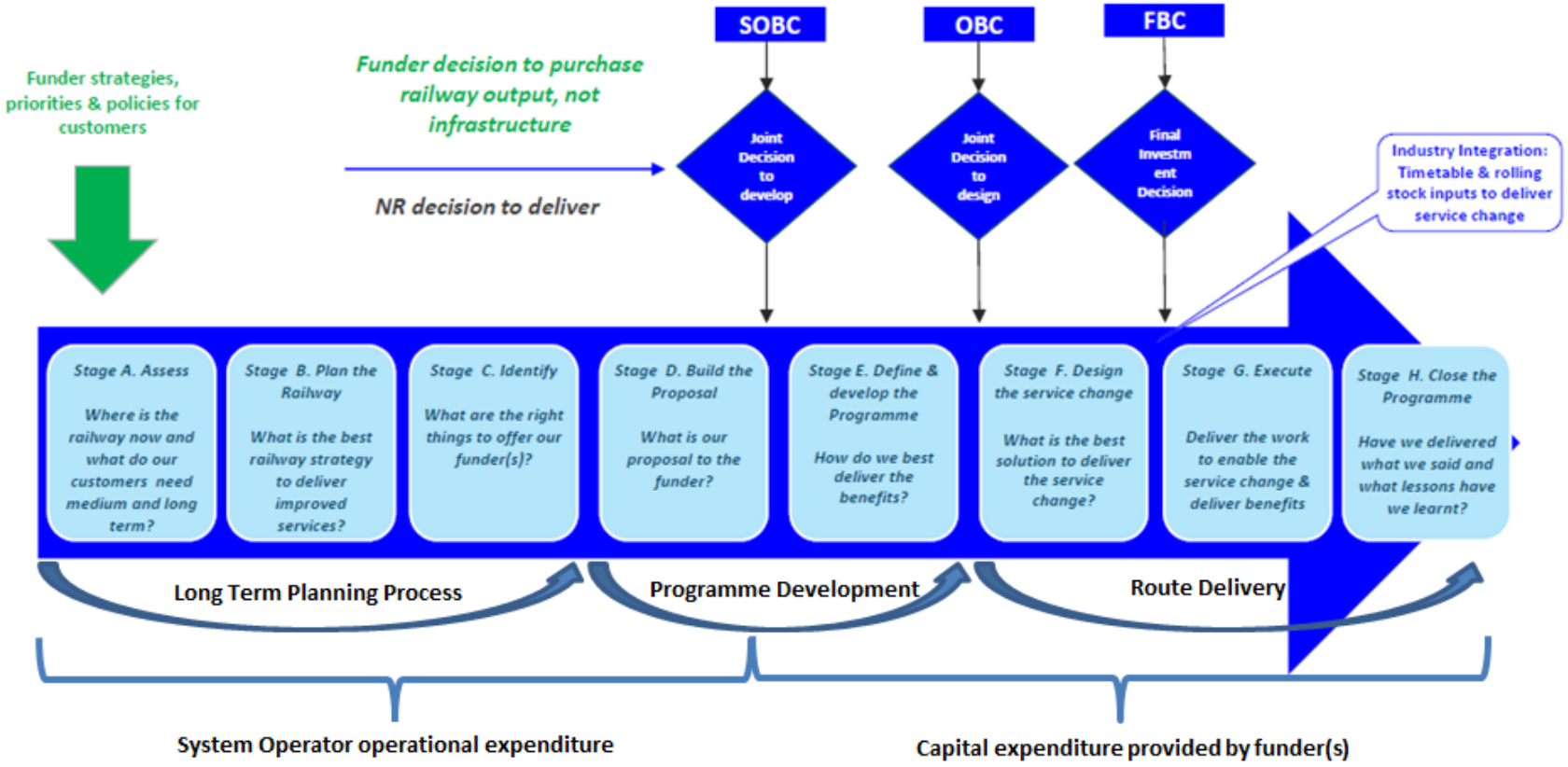
- Commit to develop a programme – the initial decision to invest in the development of a programme is informed by a Strategic Outline Business Case (SOBC) prepared in accordance with Treasury Green Book guidance.
- Commit to design – the decision to design a project and prepare it for a Final Investment Decision is informed by an Outline Business Case (OBC).
- Commit to deliver (Final Investment Decision) – the final decision to deliver a project to an agreed cost and schedule. This is informed by a Final Business Case (FBC) and a thorough understanding of the service output required together with the cost, scope and risks of delivery.

We have agreed to use this framework with DfT for new enhancements projects in CP6 and would expect to agree a similar set of principles with other funders.

A process that provides similar transparency and decision points is being developed with Transport Scotland and is expected to be in place to support their Capital Investment Strategy when it is published, and we are currently working collaboratively to identify the best practice to be built into the Scotland framework.

We have designed our operational expenditure plans to enable us to deliver the levels of activity we anticipate through the Long Term Planning Process, including sufficient funding for us to secure services such as early development and estimating. The framework (and anticipated equivalents) provides clarity of when we require decisions and capital investment from funders.

Figure 5.11 Investment Decision Framework and relationship with expenditure plans



5.6.2 Assumptions in respect of DfT funding

The SoFA made provision for £47.9bn of funding in CP6. Our plan is based on the assumption that certain sums are ring-fenced for enhancements in three categories;

- Deferred projects
- Freight & Accessibility funding
- Development funding

Governance of enhancements funding was established by the MoU and continues to evolve and mature. Network Rail and DfT are jointly reviewing governance arrangements to ensure they are appropriate to the funding arrangements and requirements for CP6.

The following table outlines the System Operator's assumptions in respect of DfT funding:

Figure 5.12 DfT funding assumptions

Enhancement Category ***It is understood that the funds within each category are not ring fenced and that movement between categories may occur***	**SoFA Total (£m)**	**Route Plans (£m – cash prices)**	**SO SBP (£m – cash prices)**
Deferred projects This category comprises the delivery of projects that span CP5/CP6 as well as those that were deferred entirely into CP6. The System Operator SBP assumes that a total of £8.6bn has been ring-fenced for this purpose with £0.5bn included in individual route plans where schemes are already committed for delivery. This funding will be governed under the arrangements established by the MoU. The remaining £8.1bn, for schemes that have not yet reached a final investment decision, is included in the System Operator SBP.	**£8,600m**	**£506m**	**£8,094m**
Freight funding Accessibility funding The SoFA continues to provide explicit support for these key areas, recognising the success of specifically funding these areas during CP5. Use of funding in in CP6 will be driven by opportunities identified through the System Operator planning process and will be subject to appropriate governance with all projects needing to demonstrate a robust business case.	**£400m** **£300m**	-	**£400m** **£300m**
Development funding The SoFA specifically provides for additional development funding in CP6. This funding will be used to progress opportunities identified through the System Operator planning processes and incorporated within the IIA, through development to the design stage. It will be necessary to identify joint Network Rail and DfT governance arrangements to support this funding, recognising the need to promote innovation and tackle both known and emerging challenges.	**£1,100m**	**-**	**£1,100m**
Total	**£10,400m**	**£506m**	**£9,894m**

5.6.3 Assumptions in respect of Scotland funding

Scottish Ministers are expected to publish a Capital Investment strategy imminently. This will set out the priorities for developing investment proposals across the Scottish network, reflecting the strategic objectives of Scottish Government (see Section 3a).

The Statement of Funds Available is anticipated to include sufficient resource to permit the Scotland portfolio to be developed to the point of commitment to deliver.

A number of priority projects, including improvements to the East Coast Main Line in Scotland and capacity increases in Edinburgh, are already in development and will progress to decision points before the start of CP6.

We will manage the portfolio to reflect both the expressed views of Scottish Ministers and emerging requirements from operators, third parties and stakeholders, as well as reflecting the requirements of network readiness for the introduction of cross-border High Speed services during CP7.

5.6.4 Assumptions in respect of HS2 funding

The HS2 'on network' works are to be funded by HS2 Ltd. These works cover a number of interventions as well as operational workstreams which will support the integration of the new HS2 service on the classic network.

The System Operator SBP assumes funding of £4.8bn will be made available to deliver these works based on the categories below.

- HS2 Infrastructure Construction Works

  £4.1bn to fund delivery of interventions on the conventional network to make way for and facilitate the construction and integration of HS2

- Rolling Stock Acceptance Works

  £190m to fund interventions on the conventional network to enable the HS2 reference train to run and verify platform lengths or traction power strengthening.

- Timetable and Performance Works

  £535m to fund interventions on the conventional network to enable the timetable, including HS2 trains and services, to operate to the desired level of performance

5.6.5 Assumptions in respect of Transport for the North funding

A step change in the level of rail connectivity between some of the North's largest cities is required to support opportunities and choices to the next generation of workers and businesses. Northern Powerhouse Rail can help deliver the integrated Northern labour market that is central to achieving economic transformation, unlocking investment potential and creating opportunity and new economic choices for millions of people across the North.

Northern Powerhouse Rail would support economic transformation in the North by delivering faster and more frequent rail journeys linking the North's six main cities with each other and Manchester Airport. It also has potential to provide much improved connectivity for other significant economic centres, and the potential to release capacity on the existing rail network for freight and other local services.

Working collaboratively with Northern Partners, TfN and the Department for Transport have been developing the Northern Powerhouse Rail network vision, making progress in improving the economic case for the Northern Powerhouse Rail network, whilst retaining the scale of ambition required to transform the North. Network Rail is working collaboratively with HS2 limited to carry out substantial development work on Northern Powerhouse Rail.

Rail journey times could be significantly reduced and services could be more frequent than now. Recent work has refined the service options and developed a programme of sequenced infrastructure concepts that for a number of corridors move significantly towards and in some cases achieve the Conditional Outputs as set out in the One North Report and Northern Transport Strategy. This process has also enabled TfN to understand the potential future economic benefits, and explore how costs could be reduced by making better use of existing and future planned infrastructure.

The System Operator SBP assumes that during CP6 there will be £800m of funding available by TfN to develop the prioritised options that meet or move significantly towards meeting the conditional outputs.

5.6.6 Assumptions in respect of Crossrail 2 funding

Crossrail 2 is a project that will transform travel across London and the wider South East, linking destinations across the region with direct train services. It will grow the UK economy by supporting jobs across the country during the construction phase and when operational.

The route will release capacity on existing lines, helping to relieve crowding and congestion on the transport network. It will support regeneration and the development across the region.

The project is being developed in partnership with Transport for London (TfL) and the Department for Transport (DfT). GRIP 2 development work is underway now to prepare for the submission of a Hybrid Bill to Parliament in 2021. Assuming the Bill receives Royal Assent by 2023, construction could start in 2024. The construction programme is 10-11 years long.

The System Operator SBP assumes that during CP6 there will be £181.3m made available by TfL and DfT to develop the Crossrail 2 programme through to completion of the Hybrid Bill process in 2023, and the commencement of advance works thereafter. This schedule assumes a commitment to proceed towards a 2021 Hybrid Bill submission is made in 2018.

Figure 5.13 Major programme assumptions (other funders)

Funder	Major Programme	Total (£m)
High Speed 2 Ltd	High Speed 2 'On Network' Works	**£4,800m**
Transport for the North	Northern Powerhouse Rail	**£800m**
Transport for London & Department for Transport	Crossrail 2	**£181.3m**
Total		**£5,781.3m**

6. People

6.1 Introduction

As System Operator, our vision is to be the recognised expert in planning the railway – optimising the use of the existing network and creating new capacity to provide a better network for passengers and freight.

To deliver on our plans, meet our customer and stakeholder expectations, and achieve our vision we will require a high performing team of capable and engaged people.

Our people strategy shows how we will achieve this through an effective organisation that will drive:

- safety in everything we do;
- one inclusive team;
- a lean organisation; and
- a plan for developing people capability.

6.2 Health, safety and wellbeing

Safety and performance go hand in hand and we aim to develop a strong safety culture with personal accountability for health, safety and wellbeing.

This will be achieved through our leaders recognising the impact they have on the wider organisation and promoting safety and wellbeing objectives throughout our teams and individual planning. Our success will be measured through the Safety and Sustainability section of our scorecard.

As System Operator we have a unique opportunity to drive improvements in system safety throughout the processes described in our operational model, through the quality of our work and the advice we provide to decision makers.

By creating a culture of openness, learning and collaborative working, where workforce safety and wellbeing is a key principle informing our decisions, we expect to positively contribute to the safety of the railway system as a whole.

Given the relative risk of rail compared to road transport, our wider contribution to the success of the industry and our customer's growth will also deliver wider societal benefits.

6.3 One team

A one team approach will not only promote a high performing team but also provide a consistent experience for our customers across the network.

We need commonly applied processes and procedures, roles and responsibilities which are understood and applied consistently, and clear communications which build trust and motivate people to become enrolled in the success of the whole team.

A cohesive and consistent team will be one that is fully engaged and led by people who are able to motivate, recruit and retain top talent. Our leadership culture will therefore be an open and approachable one, where our leaders inspire and support their teams to be successful.

There will be a continued focus towards becoming a more respectful, inclusive, diverse and welcoming organisation; where every employee feels respected and valued for who they are and what they can bring to the System Operator.

In addition to corporate initiatives (such as diversity & inclusion activities and employee engagement surveys) we have also introduced two System Operator specific capability development workstreams covering Strategic Planning and Capacity Planning each of which is led by a new Professional Head.

Whilst the scorecard approach described in this plan is the primary method of measuring our performance as a function (and at team level through tiered

scorecards), individual performance will be measured (and managed) through the standard Network Rail performance management system.

6.4 Diversity and inclusion

We will continue our focus on current diversity strategies to become an open, diverse and inclusive organisation which will enable us to become safer and even more customer driven, where our workforce reflects the diversity of the populations we serve. In the System Operator we look to take this vision even further. Given the role that we have in shaping the railway of the future, we look at how we can make the network accessible and useful to everyone in helping to make their lives easier.

We recognise that there is still work to be done before the diversity of the organisation reflects the society that it serves. We will fully implement the Network Rail Diversity and Inclusion (D&I) policy and additional workstreams to do so will be identified as the function matures. In particular, we will look at how we can attract, engage, support and retain more women, people of BAME origin and people with disabilities into System Operator careers giving particular focus to career pathing, roles traditionally occupied by one gender and promoting flexible working. We will identify apprenticeship routes and continue to build upon our current range of initiatives, such as partnering with colleges and universities.

We will set ourselves ambitious targets to increase our diversity and talent so that our teams become more representative of the general workforce and communities within which we operate. For example based upon current labour force data we would aim to achieve at least 46% female representation across the System Operator organisation up to and including our leadership team by the end of CP6. We will actively address our gender pay gap guided by Network Rail Executive Committee lead policy. In order to achieve this, we will review current attraction, selection and promotional processes and regularly measure performance.

We will complete and evaluate a D&I self-assessment, with key recommendations in place as soon as possible thereafter. Our diversity and inclusion network is led by a leadership team member and consists of diversity trained champions who will engage with people across the function.

We already consider the diversity of our customers within infrastructure enhancement projects, to make sure that any changes we make to the railway can benefit as many people as possible. We now look to strengthen this, making sure that accessibility and inclusivity are built into all areas of our planning at the earliest stages.

6.5 Changes to the organisation

Feedback from our customers has identified a number of areas where we need to enhance our service offer to them. To deliver this we must continue to increase the capacity of the function in certain areas. This section sets out the organisational changes required to enable us to deliver for our customers and stakeholders in CP6.

6.5.1 Strategy and Planning teams

It is assumed that no fundamental change in resource is required within strategy and planning in England and Wales to provide an effective client role across the portfolio for the likely future scale of work. This is dependent on the assumption that adequate programme resource is made available at the appropriate point in the project lifecycle and that there is a broadly consistent pipeline of projects and programmes.

The strategy and planning North team has been strengthened in CP6 in order to support the recast of the West Coast Main Line timetable associated with the implementation of HS2.

The strategy and planning Scotland team requires additional resource to provide a clear whole-industry client function that meets Scottish Ministers' requirements and this will be in place for CP6.

6.5.2 HS2 Integration

There are no changes to the HS2 integration team planned or anticipated at this time.

6.5.3 Capacity Planning

Improving our capability to identify opportunities in the structure of the timetable that might yield improvements to capacity, journey time and/or

performance has been a key feature in our customer consultation, and this team has been strengthened through the System Operator fit for the future programme to undertake such analysis. Our plans include further strengthening in CP6 as part of the extension of the System Operator's analytical activity.

It is projected that demand for our capacity planning activities will grow throughout CP6 to support the delivery of significant timetable change and investment, as well as forecast growth in traffic volume. This growth will both increase the volume and complexity of timetable planning activity. As such, we seek to increase the number of operational planners to deliver the CP6 calendar of events, manage the increasing complexity of planning on a capacity constrained network and to support the achievement of the route businesses requirements for train performance.

The May 2018 timetable change was delivered with considerable effort through temporary secondment of more than twenty planners from other functions in order to process the development timetable. The clear lesson learned through this experience is that we must establish appropriate resources to support the identified and planned levels of timetabling activity in CP6.

Furthermore, we intend to strengthen our capability to lead and support industry steering groups, by introducing an advanced timetable team and to provide support to our strengthened role in franchising.

In CP6 we will continue the development of a national access planning team to own, develop and implement an end-to-end framework of policies, processes, systems, tools and assurance mechanisms. This team will deliver most of the future capacity studies to support engineering restrictions on the network, for which funding is anticipated to be recovered through capital expenditure.

An important focus in early CP6 will be changes in team structure to address customer concerns around the volume of staff turnover in key roles. A structured retention plan will be executed in 2018/19 in order to tackle underlying causes of turnover including recruitment and selection, on-boarding, development of technical career paths as far as senior technical leader roles, reward mechanisms and increased professionalism of line management capabilities. A review of potential improvements to the current competence framework will also take place for our people. This plan will be informed by the lessons learned and recommendations of the May 2018 working timetable development review.

Further and on-going assessment of how closely Network Rail currently rewards to the market rate for key roles will be undertaken in advance of CP6. This will build on a strategic salary review planned for 2018/19, and whilst this review remains underway some risk exists to our final capacity planning opex position.

6.5.4 Policy and Programmes

The team will be strengthened to provide a Franchise transaction team, which will facilitate and programme manage the strengthened Network Rail engagement on each franchise transaction in order to provide consistency and continuity and to gain learning and expertise on individual transactions that can be utilised on future transactions as we progress through the control period.

The Analysis & Forecasting team has also been strengthened in CP6 as part of the extension of the System Operator's analytical activity.

6.6 Capability development

People are our strongest asset. The development of our organisational capability is aligned to our overall corporate strategic themes of 'great people', 'great place to work' and 'great performance'. Our focus will be to ensure that we are able to attract, recruit and retain the best people available for all our roles, both capacity and strategic planning, by retaining them through robust talent management, job specific training and personal development.

Our focus upon talent management, succession planning and diversity and inclusion, places a large onus upon people managers to manage their staff well, keeping people motivated, engaged, developed and working to their full potential. To support great people management, our senior leaders are business partnered by a team of chartered HR professionals who will coach and support managers to deliver great people management and leadership.

We will also continue to have a representative people engagement group which is lead at functional director level and champions our actions from our 'Your Voice' employee survey.

We will engage fully with the 'Rail Sector Skills Delivery Plan' to deliver industry investment and performance over the next ten years. We will baseline our skills demand and continue to identify skills and capability gaps in the short, medium and long term alongside the implementation of effective strategic workforce planning. This will include the deployment of various 'employee proposition and attraction strategies' which will drive diversity and talent into our teams.

The effective use of talent management, linked to personal development and succession planning, will lead to a more engaged, inclusive and transparent organisation that will support and contribute towards greater organisational capability. As part of our people plan, every person will have a development conversation with their manager, to mutually agree the skills, capability, experience and behaviours that they need to develop to improve their performance. For some capacity planning roles this will also entail review of individual performance against a specific competency framework.

To ensure rigour within our capability development planning, our leadership team will discuss people capability annually, alongside our succession planning using corporate frameworks and methodologies which separately assess performance, behaviours and potential. Training and development decisions will be made by our Leadership Team, according to our guideline principles of investment which considers cost in respect of managing public money, organisation priorities and return upon investment.

Through our people managers and people engagement, diversity and wellbeing groups, we will continue to understand the key drivers of productivity, performance and safety to support sustainable development of our people. The output will contribute to training and development investment decisions driven by the delivery of our strategic imperatives both at a macro and micro level.

Our training and development investment will comprise of a range of externally and internally delivered solutions. Priorities will be determined against four key themes: safety and regulatory, leadership and management, professional skills and strategic imperatives.

We will continue to review the development and career progression of our high potential and emerging talent. We will continue to review on an annual basis, the participation within the corporate emerging talent programmes such as apprentices, graduates and the 'Accelerated Leaders Programme' in order to develop new talent within our function.

Figure 6.1 Training and development four key themes

6.6.1 Safety and regulatory training and development

We recognise the vital contribution to the safety of the railway system by embedding safety considerations at the very beginning of the strategic planning process and throughout our end to end process. Our commitment to our 'Everyone home safe everyday' safety vision and technical compliance will be assured through regular training, development, coaching and discussion. The importance of safety by design and the contribution that can be made to the safety of the railway system, is recognised in our competence frameworks and the emerging work on our professions. Formalised training includes our internally verified workshops Construction Design and Management (CDM) regulations, Common Safety Methods (CSM) and other

identified role based training. We will continue to provide the opportunity for all teams to participate in regular informal manager lead discussions such as safety moments, safety 'stand downs' and various wellbeing initiatives.

6.6.2 Leadership and management

We will provide a range of courses and developmental 'in house' interventions, including formal leadership training such as 'Rail Industry Leaders', and 'Senior Leaders' for senior roles, and various management training courses such as 'Inclusive Leadership' and 'Coaching'. Our HR teams will continue to create a suite of events which sets out the expectations of our people managers, describes the role of a people manager and how they will best work in all people related matters. Other developmental activities will include knowledge sharing, coaching, and mentoring.

6.6.3 Strategic imperatives

Structured continuous improvement is a core element of our delivery philosophy. By concentrating upon providing value to our customers, stakeholders and funders we will deliver the service they deserve and the efficiencies they should expect through empowering our teams to make the changes to be better every day. Our current programme of work is identifying how we can embed the principles of structured continuous improvement which will support us, to optimise both our culture and performance in terms of efficiency, agility and flexibility. We will identify and train a representative number of people across the System Operator via either a one day 'awareness' workshop or three day course to become a 'lean champion'.

We will strive to be a collegial organisation by encouraging accountability and a 'coaching-led' culture. Day to day, we will ensure continuous learning through building mechanisms and processes for capturing and embedding lessons learnt from all aspects of our business.

6.6.4 Professional skills training

We wish to become a recognised leader within the rail and the wider transport industry. We will continue to focus upon our identified professions of Strategic Planning and Capacity Planning to further recognise the importance of the skills and abilities of our people who also need to understand, and make the difficult and complex trade off decisions for the whole network. During the later years of CP5 and into CP6, our skillsets are being developed with a focus upon; competences, processes and assurance and we will build upon this to identify the necessary skills, experience and behaviours for each discipline.

To ensure consistency of competence, we will continue to provide training such as:

- HM Treasury 5 Case business case writing;
- MSP4NR (our standardised project management methodology for Network Rail); and
- Introducing the Association of Project Management; Portfolio, Project and Programme management model (APM 3PM) training suite delivered by our Network Rail Sponsor Academy.

During CP6 we will develop our strategic network planning competence including how we work with a variety of funders both public and private sector to develop a railway system with passengers and freight end-users needs at the heart.

We will continue our very successful award winning Operational Planning Assistant (OPA) programme which provides significant added value to customers through knowledge sharing from a centre of excellence and creates new skilled resources for the train planning community in the industry.

We will also continue to lead the Industry Competency Development Group, working with train operators to provide dedicated development and training courses supporting more advanced operational and access planning capabilities to industry delegates, and considering other training interventions to support ongoing industry capability development.

Additionally, we will work with other external organisations, which operate professional networks and memberships, within the rail and wider transportation sectors, to establish enhanced competencies and explore opportunities for external accreditation.

7. Activities

7.1 System operator activities

The following section sets out the focus and volume of activity we anticipate throughout our operating model during CP6.

Our plans for delivery in Scotland are outlined in Section 3a

7.1.1 Strategic planning - LTPP

The volume of work in strategic planning activity in CP6 will be driven by the aspirations of our multiple funders and stakeholders. We will bring together an annual plan for our strategic planning activity engaging with these stakeholders.

Our strategic plans will include the integration of operations on different infrastructure managers' networks including HS1, HS2, East-West Rail, and put the interests of passengers and freight end users to the fore.

The LTPP framework will continue to undertake cross boundary work, looking at issues such as resilience, stations works, electrification and interoperability and enables us to meet our licence obligation to plan the future capability of the network.

The strategic planning activity will also generate corporate understanding of key opportunities and requirements that shape our Research and Development activity, including Digital Railway. This is focused on:

- an understanding of output requirements that the industry should be aiming to deliver in the medium and long term;
- changing methods by which the industry can meet changing customer demands;
- R&D, as well as Digital Railway; being key if we are to deliver greater benefits for lower cost

7.1.2 Managing output change - client role and development

For the purpose of this plan, we have assumed that the programme of development activity will be consistent with the outputs of our strategic planning process, and commensurate with enhancements activity in CP5. Unless stated, there is no currently committed funding to support the development in CP6, and therefore appropriate milestones will only be set once funding is agreed on a case by case basis. The programme of works is subject to change as development work is progressed and our funders' priorities crystallise.

We will support the Route Businesses to plan renewals in order to get benefits for passengers and/or good alignment with enhancements and proposals can include opportunities for network improvements through exploiting renewals and promoting operational solutions, if this is appropriate.

We will continue to co-ordinate the Network Change process. This is a compulsory process for consulting and compensating Train Operators for changes to the Network (including its layout, configuration or condition) in circumstances where those changes are likely to 'materially affect the operation of the Network; or the operation of trains on the Network'. It is incorporated into each Train Operator's Track Access Contract through Part G of the Network Code.

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7.1.3 Managing output change - HS2

The below programme of activities is based on current expected opening dates for HS2 Phase 1, 2a and 2b.

Figure 7.1 HS2 associated development activity

Activity	Milestone
Identification, planning, development and realisation of projects delivering wider network benefits	As appropriate
HS2 Track Access Option/Agreement or other arrangements through franchise	[tbc]
HS2 on conventional network – compensation regime	[tbc]
Train control strategy; how HS2 trains on conventional infrastructure are controlled, including traffic management and ERTMS	[tbc]
Development and ownership of Enterprise Risks for aspects of HS2 which affect the wider conventional network	As appropriate
ORR interface and regulatory matters	As appropriate
Engagement with DfT and HS2 Ltd in the development of the future Train Service Specification for HS2 trains on the conventional network	As appropriate
Sponsorship of network-wide timetable development, incorporating HS2	As appropriate
Engagement with HS2 Ltd Rolling Stock and Operations team as part of integration activity, including the Train Infrastructure Interface Specification (TIIS) (infrastructure interventions will be remitted via route sponsor).	Sept 2017 for TIIS
Sponsorship of the redevelopment of Euston Conventional Station until funding and outputs have been agreed.	March 2018

7.1.4 Managing output change - franchising

Since 2017, Network Rail has had an enhanced role in DfT's franchise programme which involves embedding a member of our staff in the completion teams and becoming involved much earlier in the development of the franchise specification pre-ITT.

In CP6 we will provide input into franchises to be let by DfT, Transport for Wales and TS. This is a cross-function activity with input into the franchise specifications to support their alignment with network capability and Network Rail deliverables

We propose to create a small and focussed team of professional franchise managers working with DfT and other franchising authorities on a franchise by franchise basis to support alignment of the franchise specification with the committed and future deliverables of Network Rail.

Our consultation has reinforced the need to contribute positively to the franchise process in order to support alignment of output specifications and also to inform the development of franchise specifications pre-ITT so that they match the capacity and capability of the network.

Figure 7.2 Franchise timetable & System Operator activity

This programme is expected to change as a consequence of the publication of DfT's "Connecting people: a strategic vision for rail"

Franchise *Based on the July 2017 version of the DfT Franchise Programme.*	ITT	Franchise Award	System Operator Milestones		
			Appointment of a Single Point of Contact (SPOC) for the Franchising process	Embedment of System Operator resources within competition team	Confirm appropriate information within Invitation To Tender on behalf of System Operator
East Midlands	2018	2019			Apr-18
Cross Country	2018	2019	Dec-17	Mar-18	Oct-18
Great Western	2019	2019	Jun-18	Sep-18	Feb-19
Thameslink, Southern and Great Northern	2020	2021	Dec-19	Feb-20	Jul-20
Chiltern	2020	2021	Feb-20	May-20	Oct-20
InterCity East Coast	2022	2022	May-21	Aug-21	Jan-22
Trans-Pennine Express	2022	2022	Jun-21	Sep-21	Feb-22
South Western	2023	2024	Nov-22	Jan-23	Jun-23
Northern	2024	2024	Jun-23	Sep-23	Feb-24
East Anglia	2024	2025	Dec-23	Mar-24	Aug-24 (CP7)
ScotRail[1]	TBC	2021 or 2024	TBC	TBC	TBC
Caledonian Sleeper	TBC	2022 or 2030	TBC	TBC	TBC
East – West Rail new franchise	TBC	TBC	TBC	TBC	TBC

[1] Note that ScotRail will require specific arrangements given Route Business Alliance with current franchise operator

While the new Wales & Borders franchise starts in CP5 (October 2018), it is likely that there will be a phased introduction of new services, new rolling stock and new infrastructure requirements. This means we will be involved in supporting the franchising authority and the franchisee over a much longer period of time compared to the traditional franchising model.

A significant piece of work that will be carried out by the Strategy & Planning, Analysis & Forecasting and Capacity Planning teams will be the work required to re-cast the WCML timetable to support smooth and integrated delivery of the HS2 timetable

In CP6 this will include:

- the continued development of train service options to accommodate HS2 services on the classic network alongside existing services and forecast passenger and freight demand, in Phase 1, 2a and 2b of HS2;
- the refinement of those options into train service specifications and concept end-state timetables for the WCML (and impacted routes, operators and franchise bidders) in 2026, 2027 and 2033;
- leading engagement with DfT, HS2 Ltd and the new West Coast Partnership in the development and testing of the above;
- leading route System Operator input to system integration processes required to deliver the wider system configurations for each phase of HS2 delivery;
- leading an industry Event Steering Group to co-ordinate the major timetable changes; and
- analysis, modelling, timetable change and timetable production associated with a timetable recast.

7.1.5 Production of timetable - working timetable development

The Working Timetable and Timetable Planning Rule development process will continue to be delivered using a bi-annual development period during the early stages of CP6. We remain committed to improving this process and embedding the principles designed by the Industry Access Programme baseline timetable concept working with our customers and stakeholders. We will continue to improve and learn from the operational implementation of timetable change.

The scale of timetabling activity will be informed by the Calendar of Events, included in Appendix B, which outlines Events established with the industry through bi-annual industry change, including;

- Full realisation of Crossrail services to Reading, Shenfield & Abbey Wood from in the December 2019 timetable
- A 6th hourly long distance high speed service on the Midland Main Line and electric services from Corby and Kettering in the December 2020 timetable
- New rolling stock and services in the North of England

There are also a number of timetable changes anticipated (also outlined within Appendix B), which although not considered formal Events, will provide improvements to the end user such as;

- Extension of Gospel Oak - Barking services to Barking Riverside;
- More, longer services in Scotland as improvements to the Aberdeen to Inverurie route and Glasgow Queen Street are completed.

In CP6 we are additionally anticipating the creation of ESGs to enable focus on delivering timetable change arising as part of;

- Delivering benefits of infrastructure enhancement in the timetable
- Northern Powerhouse;
- Delivery of Scottish enhancements and service improvements; and
- HS2 (implementation and advance timetable works).

Event steering groups build a better and more inclusive relationship with customers so that all can be heard and considered. Our plan includes improvements to this process to enable an ESG to;

- agree a project plan to achieve a smooth transition for the necessary timetable changes, arising from the event, by way of timely industry input into the process;
- oversee and facilitate delivery of the project;

- enable the continuity of a timetable from concept through development into the bid and development cycle; and
- carry out appropriate consultation with Transport Focus, London TravelWatch, Rail Freight Group and Freight Transport Association during the course of the project.

7.1.6 Analytical support for System Operator work and industry decision-making

The analytical teams within the System Operator will continue to provide expert analysis in network capacity and capability, station capacity and economics (e.g. demand forecasting and business cases) to inform and support all of the System Operator's activities throughout the operational model, from strategic planning to timetabling.

In CP6 we will extend the scope of analysis undertaken by the System Operator. Initially our priority will be the early stage development of enhancements, where an integrated, whole-system view is likely to add greatest value.

The benefits of this will be:

- decisions taken based on a whole-system view, leading to better overall outcomes;
- earlier identification of potentially conflicting decisions, and of opportunities to improve the value for money of proposals;
- reduced costs to funders: less duplication of analysis, substantial direct savings compared to consultancy costs, and indirect savings from better integration of decisions; and
- knowledge retention rather than continued knowledge capture by consultants.

We will also strengthen our analysis of the benefits of alternative uses of capacity, to help inform decisions by ORR regarding track access.

As our role evolves over CP6 we will explore with customers and funders the potential for further extension of our analytical role, including playing a greater role in support of franchising.

7.2 Process improvement programmes

Across strategic planning; economic and capacity analysis, and timetable creation we will strive to streamline, improve and make our processes more transparent.

We will continue to improve our appraisal mechanisms to better support the case for transformational projects, those where transport changes can drive demand, and not just follow it. We will work with funders on these opportunities and do more to consider integrated transport and land use issues in a more holistic way as demand for housing continues to grow.

7.2.1 Strategy and planning

Greater devolution of economic planning, transport planning and decision making means that strategic planning in CP6 involves a greater level of complexity with the teams working with a wider range of funders.

The planning process needs to be more agile and responsive in order to provide choices to inform decisions by funders.

Feedback from our customers, funders and stakeholders highlights the need for such devolved decision making and funding and for putting passengers and freight end-users at the heart of our planning.

Working with DfT, TS, Route Managing Directors and stakeholders we are examining how to better deliver the route enhancement planning process to address the routes' business needs, inform funder decisions through production of the enhancements pipeline, and support the franchising process.

We are therefore implementing Continuous Modular Strategic Planning (CMSP) in order to:

- capture the voice of the passenger and freight user from TOCs / FOCs;
- identify clear route requirements;
- consult more effectively including further utilisation of Route Boards and Route Investment Review Groups; and

- demonstrably focus on incremental opportunities and service trade-offs.

The enhancements pipeline will help inform future franchise decisions.

We will also work more closely with franchise specifiers to:

- develop market insight jointly with governments removing waste and duplication;
- better-plan pre-ITT review and advice on key train service and infrastructure capability questions;
- feed in future configuration state definitions;
- support scheme development to be at 'deliver' stage for inclusion at ITT; and
- feed refranchising capacity allocation development and delivery and sale of access rights through a continuous process.

For both CMSP and further support of the franchising process we will provide more granular market insight; developing a 'service change' pipeline for future configuration states. Our enhanced role in the franchise process will deliver better outcomes for Network Rail, the rail industry and for the end user. A focus on closer track and train alignment will improve collaboration, provide joint incentives and provide better value for money.

We are now implementing CMSP through structured continuous improvement to our long term planning process. At each stage we will review with our stakeholders.

This involves:

- identifying strategic questions in liaison with routes, TOC/FOCs and funders;
- working with key stakeholders to prioritise and 'package' the questions;
- developing clearly-defined and focused remits;
- creating focused multi-disciplinary sub-teams (including customers and external stakeholders) to answer each remit;
- creating, publishing and consulting on specific, focused, concise reports; and
- continuing to review and revisit as further questions arise and/or baselines, assumptions or forecasts change.

We are implementing this through the West Coast Main Line train service option development; the design of North of England process; and strategic planning for the CrossCountry network. We will work with Transport Scotland, operators and stakeholders to progress an integrated approach to developing long term plans that are aligned with key decision points and opportunities.

7.2.2 Capacity planning

We will continue to support the wider business and industry in improving and learning from the operational implementation of timetable change. The Approved Code of Practice: Operational Planning and Implementation of Timetable Change remains a recognised process for Route Businesses, Operators and Capacity Planning continues to provide guidance on how to plan for acceptance of a timetable change. We will continue to review Route adoption of this code of practice, and provide meaningful assurance on the effectiveness of Route Business implementation planning in the lead up to the timetable change.

We will be involved in the strengthened role as part of franchising and will seek to encourage collaboration in the modernisation of timetable planning processes and migration towards paperless publications.

Our longer term vision is to deliver a zero defect plan, requiring an unrelenting focus on Timetable Planning Rules compliance and removal of conflicts in the timetable before publication. This will require the development and deployment of new technologies preventing errors, and developing our people to put our planning community at the forefront of delivering a quality product that results in a robust train schedule for the end user.

This vision needs to be continuously iterated with our customers as there will be an inevitable break-even point for the cost/benefit of improvement.

Figure 7.3 Capacity planning improvement areas

Category	Improvement
Processes	• improve the transparency of the capacity allocation process • improve timetable change compliance to Network Code, including the purpose of Event Steering Groups • deliver continuous review and improvement of TPRs • agree an industry approach to inclusion of allowances in the timetable • improve the process for informing timetable change through introduction of new rolling stock • establish a meaningful continuous improvement strategy, method, tools and centre of excellence • improve alignment between LTPP, ESGs and timetable development • maintain and improve an access planning framework incorporating policies, processes, tools, systems • continue to deliver valued insight to inform capacity / performance trade-offs. • establish new approaches to identify capacity on the network • develop valued work instructions in support of consistent process use
Contract & commercial	• improve alignment and compliance with Part D of the Network Code • recognise the commercial drivers of operators in timetable development including journey time, and resource use • recognise the specific demands of each customer, but that there is a common contract to deliver against • meet customer expectations, consistently and compliantly with Part D of the Network Code
Technology	• develop decision support tools to enable best capacity / performance decisions • develop the Train Planning System to automate manual repeat processes, and replace historic work practices where possible • develop integrated datasets to exploit rich data sources to improve the timetable quality
People	• develop flexibility in the workforce to enable easy movement of planners to the highest priority tasks. • professionalise the Operational Planning career through competence development and accreditation • continued investment in our competency framework and an appropriate assurance regime • establish effective project management and business change capabilities in order to deliver and embed change in the industry

7.2.3 Programmes and policy

We are working with DfT and Scottish Ministers (and through Planning Oversight Group) to further develop the approach to long term planning to take account of the findings of the Shaw and Bowe Reviews.

We are working with DfT to define the pipeline of schemes for further development as part of the CP6 discussions and are looking to manage them in a way that is consistent with the MoU principles.

In Scotland we are seeking to deliver a codified approach to partnership working and pipeline for future network development with TS, learning from the experience from the MoU with DfT.

We are working with DfT, Scottish Ministers, ORR and industry colleagues to develop a more flexible approach to the funding framework for enhancements, de-coupling the funding decisions from the periodic review

process.

Many of these activities will also inform how we will work with other funders as they come on stream.

We will be working with ORR on how enhancements will be regulated in future as part of the PR18 discussions.

The analysis and forecasting team will improve our understanding of the links between transport and the economy, working with stakeholders including national and sub-national funders and improve our sources of data on pedestrian movements within stations, including through technological solutions such as the use of (anonymised) mobile phone signals to understand in more detail how pedestrians move through stations.

7.2.4 Structured continuous improvement

Our objective for structured continuous improvement is aligned with Network Rail's corporate strategic objectives to deliver 50 per cent of its employees lean trained by 2019. This will be necessary to meet our continuous improvement ambitions. Building upon our CP5 training investment, we will continue our focus in becoming a lean organisation that values innovation and embraces change to build an industry leading business.

Our aim is to be a lean organisation that values innovation and embraces change to build an industry leading business. A rolling approach to structured continuous improvement principles and techniques across the whole of the system operator team is required to do this.

The leadership team will develop a strategy tailored for each of their teams. Each of these will recognise the unique challenges of their separate areas of activity and therefore have different starting points to utilise structured continuous improvement techniques to achieve efficiency in CP6 – all with an aim of delivering more and higher quality output within the same organisation structure.

We will maintain the capability of our people in applying structured continuous improvement principles and techniques across the whole of the operational model with the objective of delivering greater volumes and a higher quality product within the same organisation structure.

This will require ongoing programme management of a portfolio of continuous improvement training and initiatives.

7.2.5 End to End Planning

Our end-to-end planning service starts with working with stakeholders to understand their goals and ends with the delivery of a timetable. The clustering of our many functions to deliver this process in one directorate provides the opportunity for a seamless end to end service to ensure stakeholders are satisfied that the outputs they require are generated.

The End to End Planning programme examines how our operating model, and the processes that support it could be improved to ensure that the end-to-end planning process is fit for purpose.

The key objectives are to:

- improve the line of sight between long term planning and timetable delivery and to consider how this can be identified and articulated;
- articulate the current operational model for the planning and allocation of capacity within the System Operator function;
- take recent examples of the end to end capacity planning process and articulate what currently works well and what works less well; and
- identify and understand barriers to delivery in those examples where capacity allocation does not match the original strategic plan agreed with stakeholders.
    - At what point in the process did the plan change?
    - What were the underlying reasons for the changes?
    - Were the changes agreed with stakeholders as a result of changing requirements?
    - What were the effects of the changes on benefit realisation?

A series of recommendations of this review will be taken forward to deliver

the end to end service with improved transparency and efficiency, including;

- review of, and proposals to revise, the Sale of Access Rights (SoAR) process to provide clarity of roles and responsibilities
- a continuously updated 'forward view' of train service changes (committed or potential) with assumptions regarding associated infrastructure.
- a proportionate change control / benefits realisation / evaluation process across the System Operator Operational Model, based on train service outputs and business case benefits.
- providing guidance to System Operator staff (& others) on what aspects of the whole railway system should be considered when, how to do this, and where to go for help.
- clarity of the constituent parts of the end to end process and how they fit together, defining single points of contact and standard communication protocols for funders.
- production of a planning guidance document which details the end to end planning activity and processes, including training needs across the System Operator function in respect of end to end planning and implement training packages as necessary.

7.3 Implementing improvements in the way we work

A number of the activities described in this section will require a structured approach in their delivery. Accordingly, they will be progressed in line with the project governance framework outlined in Section 4.4.6, confirming the following major stage gates through the System Operator delivery board;

- Identify: agree a project remit and define key outputs
- Define: conduct feasibility, defining scope, budgets, resources and risks
- Design & Plan: agree a detailed plan and transition arrangements
- Deliver: develop and deliver outcomes
- Transition: conduct transition of outcomes into business and realise benefits
- Close: conduct lessons learned reviews and application of continuous improvement techniques

The System Operator improvement initiatives are primarily in definition stage, and will continue to mature throughout 2018/19.

We will engage with customers and stakeholders as the maturity of our plans develop, and to ensure appropriate industry engagement is undertaken throughout the lifecycle of each project.

The following table (Figure 7.4) outlines the improvement initiatives, and the outcomes associated with them.

Figure 7.4 System Operator improvement initiatives

Initiative	Objective	What will be different?	Definition
End to end planning	To improve line of sight between strategic planning and delivery of timetable change	•Significantly improved and documented baseline network capability through the forward view where all service changes are captured •Robust change control and benefit realisation methodologies implemented to enable clear tracking of intended benefits throughout the planning, development and delivery lifecycles. •Sale of Access Rights processes will be improved and more transparent	July 2018
Role of the client	To develop and align the role and capabilities of the client within System Operator	•Clear roles and accountabilities throughout the lifecycle of an investment project, integrating with the governance process developed by the end-to-end programme •Clear benefits realisation and accountability for outcomes throughout the lifespan of a project or programme. •Recognition of specific client role skill set and identification of correct resource within SO	June 2018
Early stage project development	To develop enhancement proposals to the *Decision to Develop* point in the Investment Framework.	•Clarity on the roles of SO, and associated processes, for the early development stage of projects •Advice to third parties on how to engage with Network Rail •These will bring cost saving and reputation improvement opportunities	June 2018
Frameworks	To provide transparency to stakeholders and an opportunity to better define the SO accountability and a platform to identify improvements in the operation of these frameworks.	•Greater transparency and clarity to stakeholders of the frameworks that the SO influences and therefore greater clarity of the SO's role and responsibility. •Frameworks will be reviewed and maintained to ensure their effectiveness and implement opportunities for improvement	TBC
Analytics	To position ourselves as the trusted advisor and analytical expert for industry stakeholders	•Delivering a broader range of analysis and advice to our customers and stakeholders.	July 2018
Continuous improvement	To deliver improvements in the delivery and efficiency of the SO's services to customers	•This programme will deliver the productivity gains committed to in the SO CP6 SBP and enable the organisation to deliver incremental improvements in its outputs and productivity	April 2018
Franchising	To provide greater alignment between franchise outcomes and Network Rail	•There will be assurance to DfT and NR Board about the deliverability of franchise specifications. •NR will proactively influence the inclusion of our "must wins" in the baseline franchise specification.	June 2018
Continuous modular strategic planning	To put the needs of passengers and freight end-users at the heart of an industry planning process that meets the needs of our funders	•The long term planning process which is recognised by train and freight operating company customers, funders and stakeholders as providing a continuous planning process and meeting their needs for the timing of strategic choices.	April 2018

8. Technology

Investment in our systems and technology capability features heavily in the responses to our stakeholder consultation, especially in relation to Capacity Planning. The programmes of activity proposed in this SBP will continue to be developed; with business cases prepared outlining their associated costs and benefits.

It is important to note that improvement and investment in System Operator outputs and processes may not always directly result in benefits realised in the System Operator's direct performance or efficiency (such as operational expenditure), but can manifest themselves more broadly across the industry and constitute value for money in improving the rail industry's product for end customers.

For example, the CP5 improvement programme, Timetable Rules Improvement Programme, constituting a System Operator led investment of £11.3m has focussed on improving the building blocks upon which the timetable is built. Such improvements will not have a significant effect on the System Operator's key timetable quality metric (502a delay incidents, which are all 'above threshold' of three minute intervals), but is in the process of realising benefits through reduced sub-threshold and unexplained delay.

This translates to a £24m saving in Route Business Schedule 8 costs in addition to a network-wide Public Performance Measure improvement of 0.46%. The latter improves key performance metrics for Network Rail corporately, as well as Train Operators, and improves the service experienced by the end user.

ENHANCEMENTS & RENEWALS COSTS – capex

				CP5 £m						CP6 £m					
Programme Name	Project Name	Scheme category	GRIP stage	14/15	15/16	16/17	17/18	18/19	Total	19/20	20/21	21/22	22/23	23/24	Total
Business application renewals (contained within RSIT submission)	*Various*	*IM*	*0*	*-*	*-*	*-*	*-*	*-*	*26.1*	*3.5*	*4.5*	*4.2*	*3.9*	*4.5*	*20.6*
Policy & Programmes		IM		-	-	-	-	-	-	0.6	2.1	1.6	0.6	0.6	5.5
Capacity Planning	Better Access Planning	IM	0	-	-	-	-	-	-	1.7	3.2	6.1	1.0	0.5	12.5
	Train Planning System	IM	0	-	-	-	-	-	-	1.5	2.0	6.0	5.0	1.5	16.0
	Data Improvement Programme	IM	0	-	-	-	-	-	-	1.0	1.0	3.0	2.5	0.5	8.0
	Whole System Modelling	IM	0	-	-	-	2.0	2.9	4.9	2.9	4	4.4	4.2	3.1	18.6
Total										**7.7**	**12.3**	**21.1**	**13.3**	**6.2**	**60.6**

ENHANCEMENTS COSTS – opex

Programme Name	Project Name	Scheme category	GRIP stage	CP5 £m 14/15	15/16	16/17	17/18	18/19	Total	CP6 £m 19/20	20/21	21/22	22/23	23/24	Total
Capacity Planning	Better Access Planning	People		-	-	-	-	-	-	0.2	0.3	0.2	0.3	0.2	1.2
	Train Planning System	People		-	-	-	-	-	-	0.1	0.3	0.5	0.5	0.6	2.0
	Data Improvement Programme	People		-	-	-	-	-	-	0.1	0.1	0.1	0.1	0.2	0.6
Total										**0.4**	**0.7**	**0.8**	**0.9**	**1.0**	**3.8**

8.1 Business application renewals

This spend is contained within the Route Services IT (RSIT) submission. It is demonstrated here for visibility without impacting upon totals.

RSIT will support the application estate within System Operator and ensure applications are within support and fit for purpose. There are 13 core System Operator systems that require this support, including Railsys, and a number of systems feeding into or making use of timetabling processes.

8.2 Policy and programmes

8.2.1 Analysis and forecasting

Our plans include investment in software to improve the quality, transparency and presentation of the analysis that supports all the System Operator's activities.

This will require continued investment to provide a fit-for-purpose, coherent set of analytical and modelling tools, such as the acquisition or development of new demand forecasting software, models to better understand the potential economic impacts of transport projects, and the use of new data sources to improve the analysis of pedestrian movements in and around stations.

The continued provision of an up-to-date, coherent set of business forecast and modelling tools will deliver the following benefits:

- Improved accuracy and speed of analysis;
- Greater understanding of the wider economic impacts of transport investment; and
- The potential to deliver greater value for money from investments, by better informing their development.

8.2.2 Enhancements portfolio management

Spend on an Oracle module to create a repository where all enhancements data for portfolio and strategic planning purposes can be stored, that also has analysis capability and workflow.

This will provide clarity of financial tracking of costs/benefits within the enhancement portfolio, and increase the transparency of the management of the portfolio. Benefits relate to operational efficiency, business continuity and improved analytic capability.

8.2.3 End to end planning

In order to support the delivery of the End to End planning programme, accompanying investment is required in the tools and technology to support a modular approach to strategic planning. Underpinning this requirement is the need to ensure traceability of the relationship between outcomes (benefits in the timetable) and infrastructure investment.

The primary requirements include a repository for the storing of strategic planning material, such as output changes, and a mechanism to visualise the relationships between schemes and benefits. This will enable;

- reduced duplication and accelerated access to information;
- visibility of relationships between investment schemes and benefits; and
- enhanced certainty of delivering benefits.

8.3 Capacity planning

Our long term vision is to produce a 'zero defect timetable. We have developed a clear strategy throughout CP6 to gravitate towards achieving this, which includes investment in our technology portfolio.

A key focus area of that investment rests in enhancing the Train Planning System (TPS) capability to automatically detect conflicts in the timetable, and to develop dynamic rules that are of greater precision and removing the need for modelling Train Planning Rules in a different tool to the production train planning tool.

Supporting this, we will create a data governance framework that defines the parameters for data management and usage, implementing a process for resolving data issues and enabling Capacity Planning to make decisions based on high-quality data and well-managed information throughout the timetable development process.

We will develop a suite of tools and techniques including accredited training and role profiling to establish a flexible workforce that has the competence, capability, behaviours and attitudes to deliver varied improvements with the ability to both accept and tolerate change in the Control Period to drive towards a zero defect timetable

8.3.1 Data improvement programme

Planning trains is a data dependent activity and the quality of data (completeness, accuracy and granularity) dictates how effective the daily train plan will be. Operational systems e.g. Automatic Route Setting (ARS) or European Train Control System (ETCS) and more broadly the principals of the Digital Railway have a dependency on train plan data to unlock capacity and performance benefits set out in their business cases. Presently data for the same purposes is captured in different formats or there are different units of measurement applied. The data required to make decisions is also often incomplete.

The programme will work with the industry to finalise the design of a data strategy. It will include agreeing cross-industry policies and frameworks to help set out what data sets are required, what data attributes need to be captured and how the data is stored / accessed. When the strategy has been agreed and authorised the programme will transition to an IT delivery phase. It is likely this will result in the creation of a single platform for all train plan data to be hosted and common interface rules for data. It is important to recognise that the data by itself will not achieve a zero defect timetable.

We will work with the Offering Rail Better Information Services programme to incorporate the Infrastructure Capability model, scheduled for completion in 2018/19. This will become the base infrastructure model utilised within the train planning systems.

More accurate and granular data underpins the following CP6 programmes that will enable the benefit to be realised:

- Whole System Modelling;
- Train Planning System (TPS);
- Better Access Planning; and
- Digital Railway.

The programme will follow ISO 8000-150 (Data Quality Management) principles and '9 box model'. The programme will aim to harness lessons

learned from the Asset Data Governance programme.

The early stage of development of this project results in a conceptual business case. The delivery of this project is an enabler for the additional projects listed, although there are potentially efficiencies in having a single platform, for example reduced operating costs or the retirement of duplicative systems.

This programme will also work with the industry to finalise the design and delivery of a single data storage platform for all industry planning data. The aspiration being that the issues caused during data transfer will be eradicated and planning decisions will be made based on a single version of the truth. Hosting all planning data in a single place will enable augmenting of data sets to be quicker and easier. It is anticipated that this will lead to new correlations between datasets being established.

As a data dependent activity and with increasing amounts of data available it is vital from a functional perspective that data is stored efficiently and effectively. A single data platform will feed downstream systems and create new data feedback loops (i.e. Global Positioning System data can be contrasted with train plans to see whether planning and operation deliverability are consistent).

8.3.2 Whole system modelling

The tools and systems Network Rail uses for modelling the performance or operational impact of proposed changes to the use of capacity are neither fully effective nor efficient. Models tend to only be able to assess discrete scenarios, e.g. localised impact rather than the whole system effects, and are disparate i.e. the models are not easily augmented. Furthermore, models are generally manually developed, taking a long time and a high level of resource to produce outputs that, in turn, are often imperfect and difficult to interpret.

The objective of the whole system modelling programme is to increase modelling capability to answer questions about performance and operational impact and inform better decision making. The programme will focus on developing a range of capabilities - analytics, integration, visualisation and ‘machine learning’ – through approximately 12 projects.

The programme recognises the complexity of its remit and has developed a five phase approach that will cover short, medium and long term timescales. Initially the programme will look to develop solutions to exploit latent functionality in existing modelling systems in use. Equally it will look for ways to make these modelling tools quicker and more efficient.

The programme is at an early stage, but benefits are expected in the ability to establish critical performance criteria and thresholds for each part of the railway system to achieve normal operation and to optimise the recovery from perturbation. There is the potential to bring together a broad range of models and their outputs to provide an integrated view of forecast performance.

Our strategic long term objective is to equip the System Operator with the data needed (through modelling and analytics) to understand the impact of the timetable changes that are being considered on the railway as a system, for example, operational robustness, connectivity and journey times, helping to inform capacity allocation decisions, choices to funders and the transparency of Network Rail’s Sale of Access Rights processes.

8.3.3 Better access planning programme

Providing access for maintenance, renewal and enhancement, whilst limiting the impact on operators (and thus passenger and freight end-users) is an increasingly challenging task. Demand grows exponentially and the industry strives to accommodate this. However, Infrastructure Managers then need to address the increased wear and tear to sustain asset reliability and access planning becomes increasingly critical.

The engineering teams for the renewals and enhancements programmes increasingly struggle to develop fully informed plans in line with the Engineering Access Statement (EAS) process timescales, resulting in an inevitable tension and risk of late change. Supporting a move to fixed access windows for engineering delivery, with a maintenance emphasis of ‘predict and prevent’ rather than ‘fix on fail’ will require a radical re-think on many of the possessions patterns assumed today.

The objective of the better access programme is to further develop frameworks that guide the appropriate trade-offs of whether to run trains or

undertake engineering access. In doing this we seek to enable more effective and efficient planning and delivery of engineering work, as well as to reduce the volume of associated access disputes registered with the Access Disputes Committee.

This programme will work with industry decision makers to:

- review access planning processes and timescales so that there is an appropriate balance between plan stability and passenger information. It will value stream map access planning processes, making effective the end to end process;
- introduce a new access planning system to replace Possession Planning System (PPS) and to better the functionality currently available for access planners;
- develop a governance and assurance framework for access planning, notably assurance of system level access;
- develop capability and competency frameworks in access planning; and
- further spread localised examples of good practice (e.g. measurement and reporting of late possession starts on the Western Route).

8.3.4 Train planning system (TPS)

There is presently no system or tool to automatically identify when a conflict between two trains; trains and infrastructure; trains and possessions; or trains and track access contracts has occurred. Similarly there is no tool to highlight where capacity is available on the network. Train planning relies on human manipulation of large amounts of information, under tight timescales and can sometimes result in timetable defects arising.

The timetable is built using static TPRs, notably Sectional Running times (SRTs) which are units of time in 30 second increments. These are intended to be the numerical representation of the capability of the infrastructure and the trains that run on it. The values are used to assess whether the access being sought by an operator is feasible. These time increments, uncertainty resulting from the number and direction of roundings, and the difficulty in understanding the location of a train at any given point, compounds the difficulty and scale of the task to manually identify when two trains begin to affect each other.

The programme looks to achieve the following outcomes:

- a single integrated corporate infrastructure capability model provided into the TPS system (delivered by other Network Rail functions) aligning with the Traffic Management System;
- automated calculation of running times based on infrastructure and traction data, with an industry consultation to gain acceptance of this mechanism as the definitive way to calculate the equivalent of today's Sectional Running Times
- automated identification of conflicts – train on train; train on infrastructure; train on possession and train on access rights (i.e. codify contractual provisions to identify when we are in breach of them) – and solution options;
- automated validation of train routing i.e. moves cannot be planned that the infrastructure or signalling system cannot make; and
- automated identification of available capacity.

Together, these improvements will enhance the readiness and integration with digital railway principles, such as the granularity of the timetable and flexibility in operation, and increase the efficiency of timetable production.

The enhanced capabilities of the train planning systems will enable a material improvement in timetable quality through removal of defects prior to formal publication into the operational railway. It is anticipated that the project will give consideration to:

- the development of dynamic technical running times – numerical values of the physical capabilities of the infrastructure – that will enable more precise and robust timetables but also pave the way for automation;
- Increased granularity of time increments i.e. reducing the 30 second intervals timetables are built on today with a 'per second' value to enable increased precision and potential automation;
- removal of the need for modelling TPRs in a different tool to the production train planning tool (removal of B-Plan, SRTs and

Network Link planning geography constraints); and
- New industry definition, format and process for TPR development and the phasing and rollout strategy.

8.4 Developing our plans

Investment in information management systems is a key enabler to improved processes. Changing processes, particularly industry ones, requires structured change management to plan, deliver and realise benefits. We will therefore continue to develop our plans in accordance with the programme governance framework outlined in Chapter 4.

The individual programmes are all at an early stage of feasibility. Scope, timelines and associated costs are based on previous experience and costs for complex information management (IM) programmes. 2018/19 will see the development of these programmes to a state of readiness to launch solution delivery in CP6.

An overview of the System Operator technology portfolio, outcomes and timescales for definition is outlined in Figure 8.1

Figure 8.1 System Operator technology portfolio

Initiative	Objective	What will be different?	Definition
Train Planning System (TPS)	Enhance TPS functionality to enable the use of technical running times and per second timing and thus automate: •train on train conflict detection •train on infrastructure conflicts •train on possession conflicts	•A more stable and reliable system for our train planners. •Compliance with network code (Part D) obligations. •TAF/TAP compliance (European legislative requirement). •Brings systems and components back in to support. •The potential for headcount reduction.	September 2018
Whole System Modelling	Effectively & consistently support decisions from strategic planning through to real time operations with broad consensus with operators on methods	•More robust timetables reduced delays, schedule 8 costs and CASL. •Clearer understanding on the impact of decisions made trading capacity, performance, journey time and cost. •Improved Customer satisfaction of operators. •Improved productivity and reduction in time of modelling activities. •Improved alignment of franchise specifications through consistent end-to-end use of decision support tools	March 2019
Better Access Planning	To develop the capability to increase the chances the right access, at the right time for the delivery of maintenance, renewal and enhancement. This includes being able to manage the effect of late change more successfully.	•A reduction in timetable defects (502a delay). •Compliance with network code (Part D) obligations. •Improved prospect of meeting Maintenance, Renewal & Eenhancement targets.	October 2018
Data Improvement	To bring capacity planning data up to ISO 8000-150 (Data Quality Management) standard with specific focus in the following areas: •Ensure the Digital Railway (TMS and ETCS) data requirements enable DR business case realisation •Enable full Automatic Route Setting functionality and benefits by addressing associations data shortcoming •Derive operational planning data from our corporate infrastructure model to feed TPS and enable automation of timetable planning activity •Work with operators and ROSCOs to obtain enhanced traction data sets to enable automation of timetable planning activity	•Improved accuracy of the timetable and increase the effectiveness of operational deliverability. •Ability to automate conflict detection and improve the speed and accuracy of modelling, simulation and advanced analytics	March 2019

9. Strategy for commercial focus

9.1 System Operator activity in CP6

It will become increasingly important in CP6 to secure investment for enhancement projects from those who share in, or desire the implementation of, their benefits. Securing third party investment will be a feature of both the System Operator and Route Businesses approaches in CP6.

For network improvements it is likely that the System Operator will identify the outputs and cost and lead in early development, consistent with the MoU principles with national funders. Agreement to fund construction may be done via the Route Businesses. It is also likely that the Route Businesses will identify opportunities themselves, which will then be tested with us to assess their strategic fit with the operation and planned use of the system.

We have a strong commercial focus in the way in which we develop our strategies throughout the business.

9.2 Commercial focus in strategic planning

We are keenly aware that the costs of providing additional capacity on the network can be high and that there are many other demands on public and private finances. It is important that we consider all alternatives for delivering additional capacity and the benefits that this will bring. When carrying our strategic planning work, we consider a hierarchy of ways in which additional capacity can be delivered, supported by robust capacity analysis:

- best use of the existing capacity of the network;
- trade-offs between existing capacity, performance, journey time and traffic mix;
- train service changes and operational changes (for example lengthening of services);
- ways in which technology can be brought to bear (for example Digital Railway solutions) to provide additional capacity without the need for civil infrastructure interventions; and finally
- additional infrastructure requirements.

This is carried out in the analysis which supports the industry LTPP and CMSP. The appraisals that are carried out to support decision making in these areas include:

- income to the industry;
- cost vs operating expenditure;
- socio-economic benefits; and
- wider economic impacts.

9.3 Attracting private sector funding

During the creation of the enhancements pipeline through CMSP we have a role to earmark opportunities in the enhancement pipeline for the Business Development Directors in Route Businesses to follow. This is achieved by consultation and engagement with our stakeholders including sub-national, local and third party funders.

The System Operator also works with the route colleagues and the wider industry to secure third party funding, for example, to support small scale schemes commonly funded by local beneficiaries such as developers and Local Authorities.

9.4 Managing uncertainty

The level of our activity, and hence resource requirements, in CP6 is subject to significant uncertainty.

Some of our activities, such as strategic planning and production of the network-wide timetable, need to be undertaken irrespective of any specific decisions by Network Rail or its funders.

However, some of our activity is dependent on decisions which are ultimately taken by our customers, such as franchise specifications or decisions to proceed with the development of enhancements. The potential for more enhancements to be funded on a rolling basis during CP6, rather than through the periodic review, makes it more difficult to forecast future activity.

In order to adapt to the broader range of funders in CP6 and the progressive funding of enhancements from the pipeline compared to a substantial portfolio established through the periodic review process we propose that we should continue to charge separately (i.e. over and above our fixed funding) for the development of enhancements, and supporting their delivery.

The basis of charging will generally be full cost recovery, in line with current practice (for example as set out in the template Development Services Agreement between Network Rail and funders of projects). Other forms of charging may be considered by agreement between us and our customers, for example the funding of additional posts.

For HS2 associated works, core activity associated with HS2 that was previously funded via the High Speed Rail development fund and Grant funding letters will now be incorporated into our core opex. On Network Works will be funded by HS2 Ltd and any enhancements associated with HS2 will be funded via the enhancements pipeline.

In broad terms this means that our fixed funding will need to cover activities such as strategic planning; early stage development of projects including development of options to optimise whole-industry outcomes (to get them to the point at which funders can decide whether to commit more substantive development funding), inputs to re-franchising and production of the network-wide timetable. This will need to include the costs of buying in external services to develop projects to this stage, for example estimating and engineering services. These services have been funded in previous control periods from ring-fenced funds.

Uncertainty will be managed by a combination of;

- Establishing funding at a level consistent with our best current view of CP6 activity;
- Monitoring resource pressures and, where necessary, prioritising activities in discussion with our customers and funders; and
- Where significant additional activity is required, significantly over and above the assumptions in the plan, and prioritisation is not enough to deal with the issue, then we would discuss additional funding with the relevant funders.

We also intend to develop an overarching framework for how the function is engaged by other areas of Network Rail in the delivery of major enhancements. We consider this to be capitalised cost that should be considered as part of the investment decision, the volume of which will be determined in the wider Network Rail Strategic Business Plan and ORR determination. Activities would include concept modelling, timetable development, and enabling supporting engineering work.

Delivery of rework to timetabling activities as a result of late changes to engineering will be off charged to the Infrastructure Project and Network Rail Route teams driving the alterations.

We will continue to provide a planning service for Charter services, for which a planning fee will be charged. This charge will be subject to regular review and include rebates and charges to motivate timeliness of inputs and outputs.

In CP6, we will be able to recover some of the costs associated with leading the Network Change process as well as being able to off charge some costs, as yet unquantified, from developing enhancement schemes.

10. System Operator CP6 regulatory framework

This chapter sets out the funding implications of our plan in 2017/18 prices (unless where stated otherwise), for Control Period 6 (CP6).

10.1 Expenditure forecast

The table below sets out our forecast of System Operator expenditure.

Table 10.1: CP6 forecast of System Operator expenditure

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
System Operator expenditure							
Support	0	41	42	43	43	42	**211**
Operations	0	0	0	0	0	0	**0**
Maintenance	0	0	0	0	0	0	**0**
Renewals	0	8	12	21	13	6	**61**
Enhancements	0	2,624	1,982	1,679	1,186	1,344	**8,815**
Schedule 4 & 8	0	0	0	0	0	0	**0**
Allocated / attributed expenditure							
Traction electricity	0	0	0	0	0	0	**0**
Industry costs and rates	0	3	3	3	3	3	**14**
Support and operations	0	8	8	7	7	7	**37**
Schedule 4 & 8	0	0	0	0	0	0	**0**
Renewals	0	3	3	3	3	2	**14**
Group Portfolio Fund	0	2	3	4	4	5	**18**
Non-SoFA expenditure							
BT Police costs	0	0	0	0	0	0	**0**
Financing costs	0	2	1	1	1	1	**6**
Corporation tax	0	0	0	0	0	0	**0**
Total expenditure	**0**	**2,690**	**2,054**	**1,761**	**1,260**	**1,411**	**9,175**

This table includes all costs that are directly incurred by the System Operator and those that are allocated / attributed to it. It includes £8.8bn for enhancement expenditure funded through the DfT SoFA, but does not include any enhancements expenditure in Scotland. A breakdown of our expenditure assumptions in connection with enhancements is included in Section 5.6 of our plan, including our assumptions for enhancements in Scotland.

10.2 Income forecast

The expenditure set out in Table 10.1 needs to be paid for. The System Operator receives income from routes to cover its costs (excluding funding for enhancements). In Table 10.2, below, we set out the sources of our income that we expect to receive during CP6 from routes, governments and other funders.

Table 10.2: Total CP6 income

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Income from routes	0	(66)	(72)	(82)	(74)	(66)	**(360)**
Subtotal (gross revenue requirement)	**0**	**(66)**	**(72)**	**(82)**	**(74)**	**(66)**	**(360)**
Capital grant for enhancements (DfT SoFA)	0	(2,624)	(1,982)	(1,679)	(1,186)	(1,344)	(8,815)
Total income	**0**	**(2,690)**	**(2,054)**	**(1,761)**	**(1,260)**	**(1,411)**	**(9,175)**

Network Rail continues to be a corporate entity. Therefore, whilst our funding arrangements will change for CP6, we think that it is important to keep the key elements of the regulatory framework to maintain transparency of our performance and to retain flexibility for the future. This

includes keeping the regulatory building blocks approach to calculating our CP6 revenue requirement.

From CP6, the System Operator will be separately regulated and, reinforcing this distinct position, we will have our own Regulated Asset Base (RAB). The starting value of this RAB is £80m, which reflects the historic capex spend that we can evidence to-date in relation to the System Operator function.

Table 10.3: CP6 System Operator revenue requirement

£m in 2017/18 prices	19/20	20/21	21/22	22/23	23/24	CP6
SO support, operations and maintenance	41	42	43	43	42	**211**
Allocated support and operations	8	8	7	7	7	**37**
Traction electricity, industry costs and rates (including BTP)	3	3	3	3	3	**14**
Schedule 4 & 8	0	0	0	0	0	**0**
Group Portfolio Fund	2	3	4	4	5	**18**
Amortisation	11	15	24	16	8	**75**
Allowed return	2	1	1	1	1	**6**
Tax	0	0	0	0	0	**0**
Gross revenue requirement	**66**	**72**	**82**	**74**	**66**	**360**
Other single till income	0	0	0	0	0	**0**
Income from FNPO route	0	0	0	0	0	**0**
Net revenue requirement	**66**	**72**	**82**	**74**	**66**	**360**

We have calculated the CP6 System Operator revenue requirement in Table 10.3, above, using a similar approach to CP5 (i.e. similar to the adjusted WACC approach), which focuses on the funding we need to pay for expenditure during the control period (excluding funding for enhancements). The net revenue requirement in Table 10.3 is the amount of income that we need to recover from routes.

10.3 CP6 financial information

The changes to our CP6 funding arrangements will address our concerns about unsustainable increases in our debt – our debt will fall over CP6 as new enhancements are grant funded, or funded/financed by third-parties, and maturing debt is paid down. As a consequence, the value of our RAB will not increase (in real terms).

Table 10.4 sets out the impact of our CP6 funding approach and forecast expenditure on key financial metrics.

Our CP6 plan includes funding for risk and uncertainty (the 'Group Portfolio Fund'). Ideally, actual results will be in line with our CP6 plan and this funding will be gradually released to invest in improving the railway. In CP6, some of this funding will be held within routes and the System Operator, with the remainder held at a portfolio-level. There is no 'central' route in our SBP submission so we have allocated all funding for risk and uncertainty to routes and System Operator. Table 10.4, below, includes our allocation of the Group Portfolio Fund for CP6.

Table 10.4: Financial metrics

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Closing net debt	(58)	(46)	(39)	(32)	(29)	(26)	**(26)**
Closing RAB	80	80	80	80	80	80	**80**
Average net debt / RAB	72%	57%	49%	40%	36%	32%	**32%**
Group Portfolio Fund		2	3	4	4	5	**18**
Route		1	1	1	1	1	**5**
Portfolio		1	2	3	3	4	**13**
Maturing debt		10	6	7	3	3	**29**
Working capital		(46)	13	5	7	(3)	**(24)**
Cash requirement (incl. working capital and debt repayment)		2,650	2,063	1,765	1,267	1,408	**9,153**

Sign-off

This document and accompanying templates are owned by the Managing Director, System Operator.
Submission of this document indicates confirmation that:

- **all appropriate level 1 assurance activities have been undertaken (see separate advice on definition of level 1 assurance);**
- **the Director is satisfied with the quality, currency and appropriateness of the content of this document as well as the cost, volume and activity projections to which it refers;**
- **the signatories are satisfied that the plan has been assessed as deliverable, subject to the assumptions articulated in Appendix B**

Authorised by:

Jo Kaye
Managing Director, System Operator — 19th January 2018

James Coowar
Financial Controller — 19th January 2018

Appendix A – Route Description, Stakeholders and Regular Engagement

Route Descriptions & Stakeholders

Anglia Route

The Anglia route covers five main corridors through Greater London, Cambridgeshire, Essex, Norfolk and Suffolk.

- **The Great Eastern Main Line** runs between London Liverpool Street and Norwich via Colchester and Ipswich.
- **The Cross-country corridor** via Ely from Ipswich /Norwich to Cambridge/Peterborough.
- **The West Anglia Main Line** from London Liverpool Street to Cambridge and Kings Lynn.
- **The Orbital Routes**, comprising the North London line from Stratford to Richmond and the Barking to Gospel Oak Line,
- The **Essex Thameside** line from London Fenchurch Street to Shoeburyness via Upminster and Tilbury.

This route is in the lead for the following operators:

- c2c;
- Greater Anglia;
- London Overground;
- MTR Crossrail;
- TfL Rail.

London North Eastern and East Midlands Route (LNE&EM)

This route runs from the London termini of London King's Cross and London St Pancras International, through Hertfordshire, Bedfordshire, parts of Cambridgeshire, Lincolnshire, the whole of the East Midlands and Yorkshire to the North East and on to the Scottish Border. It connects major towns and cities in the North, North East and East Midlands, including Leeds, Sheffield, Newcastle, Nottingham, Leicester and York. The key lines are:

- **The East Coast Main Line** from the Scottish border to London King's Cross station.
- **The Midland Main Line** running from Sheffield to London St Pancras International.

This route is in the lead for the following operators:

- Arriva Rail North (Northern);
- East Midlands Trains;
- Grand Central;
- Hull Trains;
- Tyne and Wear Metro;
- Virgin Trains East Coast.

London North Western Route (LNW)

The LNW route runs from the London termini of London Euston and London Marylebone in the South, through the West Midlands, the North West of England and Cumbria before joining with Scotland at Gretna Junction. It serves several major cities including Birmingham, Liverpool and Manchester. The main railway lines in this route are:

- **The West Coast Main Line** between London Euston and the Scottish border;
- **The Chiltern Main Line** between London Marylebone and Birmingham Snow Hill.

This route is in the lead for the following operators:

- Chiltern Railways;
- West Midlands Trains;
- Merseyrail;
- TransPennine Express;
- Virgin Trains;
- HS2.

Scotland Route

Network Rail Scotland looks after Scotland's railway infrastructure and is part of the Scotrail Alliance (with Abellio ScotRail) that is improving the network for passengers and businesses. The main lines in Scotland are:

- **The East Coast Main Line** from the English border to Aberdeen**;**
- **The West Coast Main Line** from the English border to Glasgow**;**
- **The Highland Mainline** from Perth to Inverness;
- **The Borders Railway** from Edinburgh to the Borders;
- **The West Highland line** from Mallaig and Oban in the Scottish Highlands to Glasgow;
- **The Central Belt lines** including suburban services around Glasgow, connectivity between Edinburgh and Glasgow and the northern cities.

This route is in the lead for the following operator:

- Scotrail.

South East Route

The South East route covers the network from London across Kent, parts of Surrey, East and West Sussex and is the busiest and most congested in the country, connecting the capital and its southern and southeastern suburbs with Kent, Sussex, parts of Surrey and Europe via the Channel Tunnel. The key lines for this route are:

- **Brighton Main Line** from London Victoria and London Bridge to Brighton;
- **South Eastern Main Line** from London Charing Cross and London Cannon Street to Dover Priory and Hastings via Tonbridge
- **Chatham Main Line** from London Victoria to Ramsgate and Dover Priory via Faversham
- **High Speed 1** from London St Pancras International to Folkestone.

This route is in the lead for the following operators:

- Eurostar;
- Southeastern;
- Govia Thameslink Railway.

Wales Route

The Wales route operates and maintains the track across Wales and the border counties of England. This route links the major towns and cities of Cardiff, Newport, Swansea, Wrexham and Shrewsbury, as well as providing connectivity in more rural areas. The network also serves the main UK to Ireland ports at Holyhead, Pembroke Dock and Fishguard Harbour. The key rail corridors include:

- **The South Wales Main Line** from Swansea to the Severn Tunnel
- **The North Wales Main Line** from Holyhead to Crewe;
- **Cardiff Valley Lines** provide a dense commuter network from key towns to Cardiff.

This route is in the lead for the following operators:

- Arriva Trains Wales.

Wessex Route

The Wessex route serves the major commuter area of south-west London and Surrey and extends to Berkshire, Hampshire, Dorset and parts of Somerset and Wiltshire. In addition to commuter traffic, the route serves important regional centres, such as Bournemouth, Southampton, Portsmouth, Guildford, and Basingstoke. The line from the Port of

Southampton, via Basingstoke is one of the ley rail freight arteries in the UK, linking the Port with the Midlands and the North of England. The main railway line is:

- **The South West Main Line** from London Waterloo to Weymouth.

The route is in the lead for the following operators:

- Island Line;
- South Western Railway.

Western Route

The western route stretches from London Paddington to Penzance, through Bristol and up to the boundaries with Wales, Worcester and Basingstoke. The route also serves the commuter demand into London from the Thames Valley and into Bristol from South Wales, the leisure and commuter demand in Devon and Cornwall and the serve into Heathrow. The principle lines on the route are:

- **The Great Western Main Line** from London Paddington to Bristol Temple Meads and the Severn Tunnel;
- **The Berks and Hants line** from Reading to Taunton and beyond to Exeter, Plymouth and Penzance.

The route is in the lead for the following operators:

- Great Western Railway;
- Heathrow Express.

Freight & National Passenger Operator Route (FNPO)

During 2016/17 the FNPO route was established as Network Rail's ninth Route business. FNPO is different in scope and scale to the eight geographical Route Businesses in that it does not physically manage infrastructure. However, as Network Rail devolves more accountability to the eight geographically Route Business, FNPO provides a single point of contact and is accountable for the delivery of performance and other outputs for customers who operate across the geographical boundaries of the routes.

FNPOs customer are varied, covering freight operating companies(FOCs), CrossCountry, Caledonian Sleeper, charter operators and aspirant open access passenger operators.

The route is in the lead for the following Operators:

- Alliance Rail;
- Caledonian Sleeper;
- CrossCountry;
- Colas rail;
- DB Cargo UK;
- Devon and Cornwall Railways;
- Direct Rail Services;
- East Coast Trains Ltd (until transfer to LNE&EM);
- Freightliner;
- GB Railfreight.

System Operator engagement throughout our operational model

Strategic Planning

Through our leadership and stewardship of the LTPP, we work in partnership with the rail industry, funders and specifiers (including the DfT, TS, Welsh Government, Transport for London (TfL), and Integrated Transport Authorities), user groups and local stakeholders where relevant, including local authorities.

This work is informed by stakeholder contributions as required, including from Passenger Transport Executives (PTEs), LEPs, RDG, the Rail Freight Group (RFG) and others.

For coordination of the long term planning across Network Rail and the industry more broadly, there is engagement through the RDG based Planning Oversight Group.

We hold the strategic relationship with County Councils, Combined Authorities, Local Authorities and LEPs, and we are often the point of entry for dialogue with Network Rail as a corporate entity.

The Strategy and Planning Director (Scotland) leads Scottish Government engagement through current and emerging structures within Scotland, and our team in Wales works closely with UK and Welsh governments in order to reflect their priorities in the planning of the national railway network.

The Strategy and Planning Directors in England and Wales lead the relationships with Sub-National Funders and Principal Strategic Planners lead the relationship with city regions.

Managing Output Change

We manage the England and Wales enhancements portfolio, with key engagement with DfT being through Portfolio Board and operation of the Memorandum of Understanding (MoU) framework and programme boards.

For the current Scottish enhancements portfolio, Scottish Government engagement is currently secured through the Major Projects Portfolio Board and Programme Boards. This process is currently under review to embed best practice for CP6 and beyond.

The Welsh Government has statutory powers to enhance the railway infrastructure, and we support this by planning and developing schemes to improve the capacity or capability of the network. We work closely with Transport for Wales, a wholly owned subsidiary of Welsh Government, which is responsible for specifying and procuring the next Wales and Borders franchise in October 2018, as well as for the ongoing management of the franchise and the delivery of contractual commitments therein.

Partnership arrangements are in place with sub-national transport bodies and there are MoUs with Transport for the North (TfN) and Midlands Connect, including System Operator representation in sub-national transport bodies' governance meetings.

Regular, formal engagement with routes and operators is maintained via Route Investment Review Groups which also facilitate regular discussions on the future direction of the rail network.

One of the major output changes impacting the network is the HS2 programme. We interface between HS2 Ltd, DfT Rail Group and Network Rail. Our customers in this area include DfT Rail Group, HS2 Ltd and the Network Rail route businesses (LNW, LNE&EM, Western, Scotland and Anglia), as these are the organisations accountable for specifying outputs and/or providing funding and/or who own and operate the new or changed assets, processes or agreements.

We also own Event Steering Groups (ESGs), which are convened to enable delivery of major timetable change and include affected operators and stakeholders. These identify and co-ordinate the challenges and potential opportunities associated with future timetable changes, including the completion of infrastructure enhancements, the introduction of new vehicles or changes driven through franchise change.

The freight capacity improvement forum has been established with freight

planning practitioners and stakeholders – including end users – to improve tactical freight planning performance and set the strategic direction for freight planning. The forum is co-chaired by Network Rail and a FOC appointed co-chair and meets quarterly. A Freight Joint Board in Scotland supports the delivery of Scottish Ministers' freight strategy bringing together System Operator, FNPO, Route Business, operators, stakeholders and funders to identify and progress opportunities, integrated with the whole-industry activities of the Strategy and Planning team.

Managing the access rights framework

We engage with customers in a number of industry working groups in this arena, such as the Access Rights Group (hosted by RDG) to improve the access rights framework and strategy. We are also represented by standing memberships in Network Rail's Sale of Access Rights Panel, and support Route Businesses and customers in Network Rail's approach to deciding whether or not to support applications for track access rights.

Production of the timetable

As well as strategic planning of the network, we are also accountable for the strategic direction of the timetabling process. A range of industry fora are utilised to engage with customers and determine the strategic direction of the timetabling process, including;

- The Operational Planning Strategy Group (OPSG), a sub group of the National Task Force (NTF) includes members at operator owning group level and exists to set the strategic direction for processes, systems and performance initiatives over a five to ten year horizon. As well as helping inform industry and System Operator strategies the group helps to develop emerging opportunities to improve the timetable development process. OPSG's priorities have been built into this strategic plan for CP6.
- The annual Rail Industry Planning Conference, which we lead, provides all stakeholders an opportunity to engage in a review of emerging industry challenges, opportunities and further refine the strategic intent of the function.

We hold an eight-weekly meeting with the Heads of TOC / FOC train planning departments (Operational Planning Practitioners Group) that focuses on tactical planning issues the industry currently faces, sharing of best practice, outputs from OPSG and readiness for future new working timetable change. This is supported by the seven route timetable production managers each holding regular one-to-one lead operator meetings, the frequency of these meetings are tailored to the needs of individual operators.

During the 14 week timetable development periods for the new working timetable, fortnightly conference calls are held. All TOCs / FOCs are invited and the agenda focusses on delivery plan progress, key issues identified during validation and a look ahead. These conference calls are supplemented with ad hoc timetable practitioner meetings where operators are invited to join the NR team validating the plan. They jointly review the train timetable, graph information and planning solutions. This is also an opportunity to explain the reasons behind the likely decisions to be taken.

In Short Notice Train Planning (STP) regular conference calls are held to discuss progress with the delivery of the informed traveller plans. These can be weekly, dependent upon challenges and complexity and may be supplemented with ad hoc customer meetings that focus on particular weekend plans or blockages or conference calls for tackling processing and planning of late disruptive changes to the engineering access plan.

Appendix B – Key Assumptions

Reference	Topic (e.g. access, deliverability, climate etc.)	Assumption	Areas of spend impacted (e.g. all opex, track renewals, all spend etc.)
1	Government	There is no significant change in government administration, strategy or policy. We continue to engage with the DfT in respect of the Policy Paper: Connecting people: A strategic vision for rail (published 29th November 2017). Any changes therein have not been incorporated in this plan.	All aspects of the plan
2	Network Rail structure	System Operator remains part of Network Rail, albeit separately regulated.	Opex
3	Industry structure	There is no structural change to the industry. The key organisations, their accountabilities and the overall industry architecture (regulatory, operational etc.) remain as they are today. We also assume that the number of other Infrastructure Managers emerges as expected.	All aspects of the plan
4	Operational Model	The operational model of the System Operator and its interfaces with Route Businesses do not materially change, and the number of Routes remains as at 1st December 2017.	Opex
5	Activity Level	Our organisation design and size and proposed expenditure is sufficient to deliver our expected commitments to DfT and Transport Scotland. We have assumed to recruit adequate resources to populate the organisation design and that any vacancy gap will not be material enough to undermine the delivery of these commitments.	Opex
6	Performance	Performance forecasts will be heavily influenced by complex timetables in 2018/19 and 2019/20 (principally around Thameslink, Crossrail, Northern Hub and on the London Orbital Routes). A range in forecasts has been developed to reflect this, of which the middle of the range is indicated in our SBP. The high end range (an entry point of 26,401 incidents p/a) may inform our forecasts as we develop our plans in respect of timetable performance.	Train performance

Reference	Topic (e.g. access, deliverability, climate etc.)	Assumption	Areas of spend impacted (e.g. all opex, track renewals, all spend etc.)
7	Activity Level	Enhancement activity will be of a level commensurate with completion of the 'Hendy' portfolio, overall enhancement expenditure of a level consistent with CP5, delivery of HS2 in line with current plans; continuing development of Crossrail 2 and NPR; and development of the "pipeline" for CP7.	Opex and Capex
8	Funding framework	Major Projects will continue to be separately funded in CP6 (e.g. Northern Powerhouse Rail, East Midlands Hub, East West Rail Central Section, Crossrail 2).	Opex and Capex
9	Funding framework	The funding of enhancements will follow the framework described in the MoU between DfT and Network Rail. The MoU or similar with Scottish Ministers will be in place. A similar framework will operate with other funders.	Capex
10	Activity Level	Our operational expenditure includes resource to develop the DfT/TS enhancements portfolio to SOBC. Beyond this point our activity will be separately funded by capital expenditure.	Opex
11	Development funding	There will be capex development funding provided to the System Operator to develop the pipeline priorities beyond Strategic Outline Business Case (SOBC).	Opex and Capex
12	Activity Level	We have not included additional resource for third party funded proposals. If additional resources are required we will require additional funding to secure these resources and we are assuming the third party promoter will fund this.	Opex
13	Activity Level	The forecast calendar of events is, and known timetable activities are, as stated in this appendix. Future changes to the calendar of events may result in the need for additional funds to be made available for System Operator costs	Opex
14	Deliverability	The organisation is right sized for the delivery of Scottish outcomes as described in the HLOS and the yet to be published SoFA will support these outcomes.	Opex
15	Franchising	Re-franchising timetable remains as currently published, dated July 2017. The Policy Paper: *Connecting people: A strategic vision for rail* (published 29th November 2017) and any changes therein have not been incorporated in this plan.	Opex
16	Funding framework	The buying in of services to support early stage project development (pre SOBC) will be funded through core opex.	Opex

Reference	Topic (e.g. access, deliverability, climate etc.)	Assumption	Areas of spend impacted (e.g. all opex, track renewals, all spend etc.)
17	Deliverability	The Offering Rail Better Information Services programme will deliver a credible infrastructure capability model for re-use by other Network Rail functions, enabling integration with the System Operator portfolio of capital investments.	Capex
18	Funding framework	The resources in the System Operator to support HS2 strategic planning works (including HS2 stage 2 phase), funded via the HS2 ring-fenced fund in CP5, will be funded through core opex in CP6.	Opex
19	Deliverability	There is sufficient resource in the supply chain to support the level of anticipated development activity indicated by; the level of funding provided by DfT, the expected activity to be supported by Transport Scotland, and the requirements of the Sub National Transport Bodies.	Opex and Capex
20	Deliverability	There is sufficient procurement resource available within Network Rail to support our procurement needs.	Opex
21	Performance	CP6 incident and minute calculation methods (for example, delay thresholds prior to creation of a delay incident) don't change and affect delay incident forecasts.	Train performance
22	HS2	HS2 progresses according to current publically planned timescales and assumptions (as at 01st December 2017), with no fundamental change to funding model.	Opex
23	Funding framework	Non SoFA enhancements development will be fully recoverable.	Opex
24	Activity Level	The MOU frameworks (or similar) can be implemented with no further resource increases.	Opex
25	Activity Level	Level of activity to support CMSP is the same as that required to support the existing approach to the industry LTPP.	Opex
26	Misc.	Print / publication costs remain the same (quantity of print) owing to the reluctance or inability of the industry to invest in hand held technologies.	Opex
27	Deliverability	The opex funded improvement change programmes are deliverable within the existing headcount.	Opex
28	Charging assumption	NR functions and routes will charge at standard Oracle Time & Labour hourly rates.	Opex

Reference	Topic (e.g. access, deliverability, climate etc.)	Assumption	Areas of spend impacted (e.g. all opex, track renewals, all spend etc.)
29	Charging assumption	There will be no 'cross-charging' between System Operator teams unless for a third party funded project.	Opex
30	Charging assumption	Capacity planning Opex budget is set at a level sufficient to deliver outputs in line with the Calendar of Events that is known about at the time of authoring the Strategic Business Plan. Material changes to the enhancement and renewals programmes which may require re-work of capacity studies or timetable development activity, may be required to fund this incremental work.	Opex
31	Corporate assumption	10% of all headcount will require a new laptop in CP6.	Opex
32	Corporate assumption	50% of all headcount will require a new mobile phone.	Opex
33	Corporate assumption	30% of all headcount will require subscriptions.	Opex
34	Development Funding	42% of analysis and forecasting working days can be recovered.	Opex
35	Reporting	Network Rail will not be reporting Network Availability by the Possession Disruption Index metrics in CP6. The Network Availability Reporting System (NARS) will be redundant by the start of CP6. Any requirement to report Network Availability (other than through the mechanisms proposed in our Scorecard supporting document) will require additional investment as outlined in Appendix D.	Capex and Opex
36	Funding framework	Access planning roles for capacity studies are capex and recoverable against projects requiring studies.	Opex
37	Deliverability	Short form strategy activities are aligned and deliverable.	Opex
38	Stakeholder Engagement	Where requirements for stakeholders and other parties to provide data exists, this will be available to us when required.	Capex and Opex

The following Calendar of Events (and associated register of timetable changes which have not been assessed as Events) underpins assumption 13 within the assumptions log.

Calendar of Events

Expected Timetable Implementation Date	Event	Type of Event	ESG
December 2018	Great Western Route Modernisation Configuration State B: Full Intercity Express Programme and West of England services. Greater Bristol Programme, Filton Bank capacity enhancement, additional platform at Bristol Parkway	Timetable	Western & South Wales
	Paddington (Crossrail platforms) to Abbey Wood	Enhanced Infrastructure	Anglia
	Thameslink Programme Key Output 2 - up to 24 trains per hour between Blackfriars & St Pancras International and reconstructed London Bridge and Redhill capacity enhancement	Enhanced Infrastructure	SE Incorporating Thameslink KO2
	Timetable change to reflect reduced platforms at Euston	Timetable / Infrastructure Change	West Coast
	Derby Area Remodelling	Timetable / Infrastructure Change	East Midlands
May 2019	None		
December 2019	Great Western Route Modernisation Configuration State C: Crossrail Full Service West - including services to Reading	Enhanced Infrastructure	Western & South Wales
	Crossrail Full Service East - including services to Shenfield, Liverpool Street & Abbey Wood	Enhanced Infrastructure	Anglia
	North of England - TransPennine Express and Northern franchise commitments. New rolling stock and TransPennine Express services on the East Coast Main Line also introduction of Northern Connect services	Timetable / Infrastructure Change	North of England
	Greater Anglia timetable recast and the introduction of new rolling stock	Timetable & Rolling stock	Anglia
May 2020	None		
December 2020	Introduction of 6th hourly Long Distance High Speed train service on the Midland Main Line. Electric trains between London and Kettering / Corby. Capacity schemes Bedford to Kettering & Corby	Timetable / Infrastructure Change	East Midlands
May 2021	New East Coast Main Line timetable	Timetable / Infrastructure Change	East Coast

Changes from Draft December 2018 version are shown in red

Changes which are not Events				
Expected Timetable Implementation Date	**Change**	**Type of Change**	**End Date**	**Reason for Change not being an Event**
December 2018	Rolling Programme of Electrification: Edinburgh to Glasgow Improvements Programme KO3: Electrification Greenhill Lower Junction-Carmuirs/Larbert and Polmont Junction-Stirling-Dunblane-Alloa with new rolling stock. Edinburgh-Glasgow further journey time improvements	Enhanced Infrastructure	Dec-18	Timetable changes expected due to full deployment of EGIP EMU services on the E&G/Dunblane and Alloa routes
	Aberdeen to Inverness Improvements (Phase 1)	Enhanced Infrastructure	Dec-18	Timetable changes expected - insufficient to qualify as an Event
	Highland Main Line Journey Time Improvements (Phase 2)	Enhanced infrastructure	Dec-18	Timetable change as a result of the introduction of HSTs
	Bristol-Cardiff Electrification	Enhanced infrastructure	Dec-18	Not expected to drive significant timetable change
	East Coast Main Line Intercity Express Programme (IEP): Capability works and rolling stock introduction	Enhanced infrastructure / Rolling stock	Dec-18	Not expected to drive significant timetable change
	Wales & Borders refranchising and timetable review	Timetable / enhanced infrastructure	Dec-18	Timetable changes expected - insufficient to qualify as an Event
		Redacted		
	Calder Valley East JTI. Line speed improvements and headway reduction between Hebden Bridge and Bradford Interchange	Enhanced Infrastructure	Dec-18	Timetable changes expected - insufficient to qualify as an Event
		Redacted		
	4 TPH Euston to Watford (DC lines)	New franchise	Dec-18	Extent and timing of timetable change(s) not currently known
		Redacted		
	Motherwell re-signalling enhancements - Capacity improvements on the Shotts line	Enhanced infrastructure	Dec-18	Timetable changes expected - insufficient to qualify as an Event
	West Midlands franchise increased service level	Timetable	Dec-18	Timetable changes expected - insufficient to qualify as an event
	Introduction of Class 717 rolling stock on the Moorgate branch	Rolling stock	Dec-18	Timetable changes expected - insufficient to qualify as an event
May 2019	Rolling Programme of Electrification: Midcalder to Holytown (Shotts) route	Enhanced Infrastructure	May-19	Not expected to drive significant timetable change
	East Midlands franchise	New franchise	Aug-19	Extent and timing of timetable change(s) not currently known
	East Anglia Franchise. TS2 of East Anglia ITT including 2tph shuttle between Angel Road and Stratford, journey time improvements on GEML and increased off peak service between Ipswich and Norwich.	Timetable	May-19	Timetable changes expected - insufficient to qualify as an Event
	Rolling Programme of Electrification (Shotts)	Enhanced infrastructure	May-19	Timetable changes expected - insufficient to qualify as an Event
	Highland Mainline	Enhanced infrastructure	May-19	Timetable changes expected - insufficient to qualify as an Event
	Stirling, Dunblane Alloa: Rolling Programme of Electrification: Phase B: Larbert to Stirling North Phase C: Stirling North to Dunblane Phase D: Stirling to Alloa	Enhanced infrastructure	May-19	Timetable changes expected - insufficient to qualify as an Event
	West Coast Partnership Franchise	Timetable	Apr-19	Extent and timing of timetable change(s) not currently known

December 2019	A2I, Aberdeen to Inverurie ½ hourly service introduced	Enhanced service from infrastructure introduced Sept '19	Dec-19	Timetable changes expected - insufficient to qualify as an Event
Redacted				
	New Dunbar down platform	Enhanced infrastructure	Dec-19	Timetable changes expected - insufficient to qualify as an Event
	EGIP Key Output 4 - Completion of Glasgow Queen Street work to enable 8 car trains	Enhanced infrastructure	Dec-19	Timetable changes expected - insufficient to qualify as an Event
	Cross Country franchise	New franchise	Dec-19	Extent and timing of timetable change(s) not currently known
	Felixstowe Branch enhancement	Enhanced Infrastructure	Dec-19	Extent and timing of timetable change(s) not currently known
Redacted				
May 2020	South Western Railway new rolling stock and timetable change	Timetable & Rolling stock	May-20	Timetable changes expected - insufficient to qualify as an Event
	Great Western Franchise	New franchise	May-20	Extent and timing of timetable change(s) not currently known
	Kings Cross area S&C / re-modelling	Enhanced Infrastructure	May-20	Not expected to drive significant timetable change
Redacted				
December 2020	Extension of Gospel Oak Barking services to Barking Riverside	Enhanced infrastructure	Dec-20	Extent and timing of timetable change(s) not currently known
Redacted Redacted Redacted				
	c2c timetable recast and Beam Park station opening	Timetable	Dec-20	Extent and timing of timetable change(s) not currently known
May 2021	Thameslink Franchise	New franchise	Sep-21	Extent and timing of timetable change(s) not currently known
	West Midlands franchise increased service level including Sundays	Timetable	May-21	Timetable changes expected - insufficient to qualify as an event
December 2021	Chiltern Franchise	New franchise	Dec-21	Extent and timing of timetable change(s) not currently known
May 2022	None			
Redacted				
	Intercity East Coast Franchise	Timetable	Mar-23	Extent and timing of timetable change(s) not currently known
	Transpennine Express Franchise	Timetable	Apr-23	Extent and timing of timetable change(s) not currently known
May 2023	None			
Redacted				

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Appendix C – SBP Stakeholder Engagement

This appendix sets out the core messages from our customer consultation, and how we have responded to them in the creation of this plan. A log of our consultation and how this has informed our plans is included in a supporting document to this SBP

Strategic Planning

Improved strategic planning

Our customers want the System Operator to produce and develop plans which are robust, with fewer assumptions and greater linkage between investment and the outcome in terms of benefit. This would include opportunities to improve the capability of the network without major enhancements.

Action we're taking;

The System Operator will be clear about the outcomes that it thinks are required, the evidence to support the decisions of if and how to fund these outcomes, and will be accountable for the delivery of these outcomes once funding is certain. Our plans include the adoption of a modular approach which will be more flexible and adaptive to incremental development, and more clearly capturing the solutions considered in achieving the outcomes required. We have included the delivery of this approach on our scorecard.

Analysis to support decisions

Our customers see it as a priority for the System Operator to enhance the visibility of the baseline network capability, and to provide options supported by comprehensive analysis to inform decision making by funders.

Action we're taking;

Our plans include the strengthening of our analytical capability specifically to provide quality factual evidence to inform decisions. An assurance framework for our analysis will be developed, with outputs providing transparency of choices to customers and funders through industry based economic and capacity analysis. Our approach to measuring customer engagement with our outputs will include feedback on this area.

Modernisation

Our customers want the System Operator to carefully consider proposed investment, ensuring value for money and the use of new technology where appropriate.

Action we're taking;

Our plans to deliver our strategic planning through a modular approach will include consideration of technology as a solution to meeting challenges that we have, for example, a digital railway approach or alternative power solutions. Our enhanced analysis capability will provide transparent data to support recommended outcomes and solutions.

Project development

Our customers want the System Operator to ensure a balance is found between timeliness of funding decisions and flexibility in early project development stages to encourage innovation and ensure the best possible industry solutions are developed.

Action we're taking;

We are implementing plans to change the way we seek to fund projects, creating greater flexibility to innovate during development without the constraint of a fixed funding amount set very early in the life of the project. This requires us to also have good governance and change control which is something we have been working on improving during CP5.

Managing Output Changes

Franchising
Our customers see it as a priority for the System Operator to enhance its capability and strengthen its voice in the franchising process, improving the alignment between Network Rail outputs and those contained within franchises.

Action we're taking;
We have agreed with DfT an enhanced role for Network Rail in the franchise competition process. This includes embedding a member of staff into each DfT competition team to improve collaboration and understanding at an early stage, as well as the System Operator providing input and assurance around the franchise specification prior to ITT. This is included in our scorecard. The System Operator will provide expertise to support Route Businesses throughout the franchise competition process.

End-to-End Planning
Our customers see it as a priority for the System Operator to improve line of sight between investment outputs, train service specification and timetable delivery, ensuring that outcomes are consistent with the investment case. When change occurs, this should be controlled and communicated.

Action we're taking;
Our plans include taking forward the output of a review of the end-to-end planning process, which focuses on enabling the industry visibility of benefits, the impact of output changes upon those benefits and ultimately delivery through the timetable development process. The progress of our plans is included on our scorecard.

Value for money
Our customers see it as a priority for the System Operator to enhance its capability to control cost and ensure value for money is delivered across the enhancements portfolio, including greater integration of future capability in renewals activity.

Action we're taking;
Our role as the System Operator includes the management of the enhancements portfolio, for which we propose to invest in creating a repository to store all enhancements data for portfolio and strategic planning purposes. This will enable improved visibility and analysis, improving our capability to manage the portfolio through our existing framework.

Role of the client
Our customers see it as a priority for the System Operator to improve its capability in establishing the benefit of investments, holding programmes to account for delivery and then subsequently realising those benefits.

Action we're taking;
We recognise the need to strengthen the capability of our internal clients so that we better represent the needs of our funders, industry clients and stakeholders. This will be one of our key change programmes as we move from CP5 into CP6, focusing heavily on the capabilities and enablers needed to perform effectively as a client for benefits of enhancements. The development of this capability is included on our scorecard.

Managing Access Rights Framework

Better use of capacity
Our customers see it as a priority for the System Operator to be more proactive in identifying capacity opportunities, and to support new access opportunities.

Action we're taking;
The System Operator has created a team of people to identify latent capacity within the timetable, and where restructuring of the timetable could deliver benefits to a range of areas (such as capacity, journey time, etc.). This team will work with the Route System Operator to identify opportunities and focus areas to deliver faster benefits than could be realised through enhancements.

Event Steering Groups

Our customers see it as a priority for the System Operator to improve the Event Steering Group(ESG) process, with greater involvement of the Network Rail Route teams and provision of supporting capacity analysis.

Action we're taking;

Our plans include the strengthening of the Capacity Planning team supporting the ESG process, providing dedicated project management and capacity analysis capability. Our leadership and management of the ESG process also forms part of the improvements stemming from the End-to-End planning programme, enabling a more structured link between the strategic planning process and timetable development to ensure benefit delivery. The progress of ESGs is included in our scorecard.

Sale of access rights

Our customers see it as a priority for the System Operator to support Network Rail in streamlining the sale of access rights decision making and the provision of improved information to customers as the process progresses.

Action we're taking;

Our plans include providing greater clarification and understanding of the System Operator's role in Network Rail's approach to deciding whether or not to support applications for track access rights, and how this will integrate with equivalent decisions made by other Infrastructure Managers through CP6. This will include how and when the System Operator will provide specialist advice to Route Businesses as part of the process.

Production of the Timetable

Timetable Performance

Our customers see it as a priority for the System Operator to support the delivery of customer's punctuality targets, and to improve the quality and granularity of the timetable in relation to punctuality.

Action we're taking;

Our plans include a range of programmes which improve the performance and quality of the timetable, as well as the granularity at which it is planned. Our intent is to deliver a zero defect timetable, enabled by improved data, systems and people capability. Timetable performance and our related improvement intentions are included on our scorecard.

Balancing Competing Demands

Our customers see it as a priority for the System Operator to be able to transparently balance competing demands, such as journey times, connectivity and performance.

Action we're taking;

Our plans involve the development of analytical tools which broaden visibility of these demands, and how they are affected by timetabling decisions. We anticipate use of these tools throughout the end-to-end planning process. We also plan to continue our Whole System Modelling programme, introducing wider capability than solely the balance of performance and capacity to be scrutinised in making rounded capacity and strategic decisions. Progress in this area will be visible on our scorecard through the Capacity Planning improvement initiatives

Capability alignment to Train Planning Rules

Our customers see it as a priority for the System Operator to improve line of sight between network capability and planning rules, providing a single source of the truth for timetable planning and a robust baseline from which to inform enhancements.

Action we're taking;

Our plans to improve the production of the timetable heavily focus on continuing the work undertaken in CP5 to improve the building blocks of the timetable. The SBP sets out our focus for CP6, enhancing our system capability to provide more dynamic planning rules underpinned by the capability of the network. Our progress in this area will be visible on our scorecard.

Timetable Processes

Our customers see it as a priority for the System Operator to improve its timetabling processes and systems to make it more responsive and flexible for its customers. Focus should be placed in improving the technology and confidence in the supporting data.

Action we're taking;

Our plans focus on increasing the level of automation in the timetabling process. Greater automation will accelerate the System Operator's response to customer driven change, and may unlock some of the industry barriers to a more flexible timetable process, particularly in relation to improving industry train plan data and associated customer confidence. Our progress in this area will be visible on our scorecard, along with our timeliness of response to customer requests.

Benefit delivery

Our customers see it as a priority for the System Operator to improve decision making during timetable development, ensuring the benefits expected by funders are delivered.

Action we're taking;

Through the end to end programme we are going to identify the improvements that we need to make in our processes in order to better connect the line of sight in the outputs we are funded to deliver and the timetable that is produced as a consequence. This includes being transparent about the impact external decisions have on realisation of that output and ensuring that our people have the capability and tools that is required to own and deliver the end to end process.

Real Time Operation

Linkage to the end-to-end process

Our customers need the System Operator to improve visibility of information relating to real time operation, as well as the feedback loop between it and the strategic planning and development processes to ensure constraints are addressed.

Action we're taking;

Alongside the improved alignment between the Route System Operator and the Route Business organisation, localised measures outlining Route Priorities and improved local governance form a key feature of our measurement and governance system, strengthening the feedback loop with the strategic planning and development process.

How should System Operator measure itself?

Scorecards

Our customers see it as a priority for the System Operator to focus both on customer driven local needs as well as longer term network-wide strategic measures. Metrics on these scorecards should demonstrate the performance of the System Operator function, as well as its improvement plans.

Our customers recognise they all have individual needs, and need the System Operator to take these needs into account as part of measuring its performance.

Action we're taking;

We have proposed a three tier measurement system. At a network-wide level, a functional scorecard is proposed which, in addition to metrics focussed on managing the business, there are measures of the effectiveness of each section of the System Operator's operational model and the improvement programmes we seek to deliver.

Supporting this, we propose a series of scorecards that will be used to outline the effectiveness of the System Operator's operational model in more detail, and also for use with the Route System Operator and our route and operator customers. Each of these scorecards will contain a number of common measures – for example in the area of safety. They will also contain measures agreed with the Route Businesses, measures agreed with the operators for which they are the lead route and potentially sub-national funders.

A new System Operator governance framework is included within our plans, to provide customers the confidence that the System Operator is held to account at all appropriate levels of the business.

Others

Resources

Our customers see it as a priority for the System Operator to ensure that it has the capability, capacity and the funding it needs to take a leading role in future industry plans whilst being able to improve day-to-day delivery in the short term.

Action we're taking;

This has been substantially completed through our 'fit for the future' programme which has now been completed. A number of areas have been identified where further strengthening of the organisation is necessary to deliver for our customers, with investment in capacity planning planned to occur within CP5 in readiness for CP6. This aligns with the increased volume and complexity of planning work that is now being experienced across the industry. The SBP also sets out the outcomes and programmes of work we will deliver in improving our capability, and the funding we consider necessary to achieve them. Our scorecard will measure the delivery and funding arrangements for these programmes of work.

Continuous Improvement

Our customers see it as a priority for the System Operator to share best practice and ensure the whole organisation learns through localised lessons. The organisation should strive to continuously improve its activities.

Action we're taking;

The SBP includes our commitment to structured continuous improvement, supported by Network Rail's wider 'Better Every Day' programme. This will include developing the capability within the System Operator organisation, and the use of structured tools to identify, apply and measure improvements to processes and working practices.

Training and development

Our customers want us to develop our people to enhance our capability and culture throughout the System Operator organisation, addressing areas such as decision making, analytical capabilities, relationship management and collaboration.

Action we're taking;

Our plans recognise that it is key that the people within the organisation have the requisite skills, tools and are empowered to understand and make the difficult and complex trade off decisions for the network that are regularly required. Our focus will include shaping the capabilities needed to provide a strong client role and further developing our Operational Planning Assistant programme.

Frameworks

Our customers see it as a priority for the System Operator to provide clarity of its role and relationship with Network Rail Routes, including how it will hold the wider company to account for delivery and provide frameworks and assurance for activities such as Access Planning.

Action we're taking;

This business plan outlines the System Operator activities and relationships with other Network Rail functions. Our proposed scorecard and governance systems will heavily feature in ensuring that our customers and stakeholders have clarity in the role and accountability of the System Operator. A key feature of our plans for the remainder of CP5 and CP6 rests in providing clear frameworks and processes, such as for the Sale of Access Rights process, and we will seek to engage with our customers to ensure their priorities are addressed in doing so.

Cross-route train journeys

Our customers see it as a priority for the System Operator to ensure that the end-to-end planning process takes full account of the important of the network as a whole, rather than constrain focus to individual routes.

Action we're taking;

The System Operator's role is to act as the 'glue' that holds the network together by planning it cohesively, and our plans are developed with this in

mind. In addition to embedding this principle throughout our End to End planning programme, our organisation structure includes a Route System Operator that aligns with the Freight & National Passenger Operator organisation. This team will ensure the needs of our national operators are addressed throughout the System Operator operational model.

Governance

Our customers want clarity in how System Operator activities will be governed, with clearly visible accountabilities and a meeting framework supported by remits, attendance, and outcomes to enable them to ensure the right attendance and preparation.

Action we're taking;

Our SBP outlines a governance framework which we consider will enable clarity of accountability at all levels of the business. This ranges from an independently chaired advisory board to local Route System Operator governance supported by the Tier 2 and 3 System Operator scorecards.

Engagement

Our customers see it as a priority for the System Operator to engage with operators and also with owning groups to encourage greater strategic decision making in the industry.

Action we're taking;

Our SBP outlines our approach to ensure operators, owning groups and funders are engaged throughout the System Operator operational model. In addition to our engagement approaches, our plans include an output driven customer engagement measurement approach, which will focus on both the quality of the product of the System Operator and the manner in which our stakeholders have been engaged.

Appendix D – Scenario Planning

Part (1): Tactical scenario planning for CP5

- Scenario 1: 20% increase in total remaining expenditure

Details and benefits of additional expenditure in CP5

Area of spend	Yr 4-5 outstanding spend (£m)	Potential investment increase (£m)	Comment on benefits
Accelerate project feasibility and development	£0m	£1.5m	Enables System Operator programmes to enter CP6 in a greater state of maturity, including completion of early stages of MSP4NR and outline benefit cases for programmes. Potentially earlier delivery of benefits for programmes.
Franchise capability	£0m	£1.1m	Enables System Operator to strengthen its capability earlier in key areas, including franchising and event steering group management. The former would see improved inputs and industry alignment through franchise processes (East Midlands, Cross Country & Great Western franchises) for the duration of the franchise
Capacity planning strengthening	£0m	£3m	Improved management of December 2019 timetable events affecting Anglia, East Midlands, North of England and Western & South Wales.
Customer advocacy	£0m	£0.3m	Accelerate Customer Satisfaction measurement plans, enabling quicker baseline and context between Control Periods, including analysis of quality of System Operator outputs. Enables earlier continuous improvement of System Operator outputs and informing System Operator improvement
Total	**£0m**	**£5.9m**	

- Scenario 2: 20% decrease in total remaining expenditure

Details and impacts of reduced expenditure in CP5

Area of saving	Yr 4-5 outstanding spend (£m)	Maximum potential saving (£m)	Comment on impacts/issues
Reduced project development and delivery of local priorities	£10.4m	£2.1m	External parties would complete their own strategic planning activity in isolation to other elements within the railway system. Enhancement pipeline is underdeveloped and third party funding opportunities not identified. Erosion in relationships and reputation of industry, as well as loss of mandate for System Operator in CP6.
Reduced strategic planning capability			Relationships with key funders would deteriorate as insufficient time can be put to the relationship and the funders key issues
Early stage continuous improvement capability development not undertaken	£0.2m	£0.2m	Continuous Improvement capability not available to the function until mid CP6. Utilisation of Structured Continuous Improvement to deliver greater quality and quantity of System Operator outputs delayed and unable to yield initial benefits. Results in efficiency expectations for Years 1-3 of Control Period not being delivered, equating to £5.6m additional operational expenditure in CP6.
Outputs of the End to End planning process not taken forward until CP6	£0.2m	£0.2m	Potential solutions addressing the outcomes desired from the End to End Programme not shaped until CP6, delaying improvement actions. Loss of alignment with people capability programmes to improve the client capability in the function.
Reduce capacity planning resource base	£28.9m	£3.4m	Impact on timetable development and underlying 502a performance, (c. £5m-£8m over two years exposure in Route Business Schedule 8 compensation payments) creating prolonged exposure of poor performance and negative impact on customer relationships.
Total	**£39.7m**	**£5.9m**	

Part 2: CP6 scenario planning: investment options

Details and benefits of investment options for CP6

Potential Investment	Cost	Summary
TPS enhancements	**£6.1m**	Further enhancements to TPS – above those included in the core plan - to improve the end to end industry train planning process. The improvements would include further functionality being exploited in an access planning module.
Capacity planning data improvements enhancements	**£4m**	Develop advanced and predictive analytics to 'machine learn' values for train planning rules. Applying predictive analytics to perpetually recalibrate train planning rule values to ensure the most accurate and granular values are used to build timetables.
Network Availability reporting	**£1m**	The Network Availability reporting system is unusable beyond CP5. If there is a requirement for a specific Network Availability metric (e.g. PDI-P, PDI-F) then a new system will have to be specified and developed to enable this calculation and reporting. This investment option (and the value thereof) would enable the calculation and reporting of PDI-P and PDI-F in CP6, though with the same issues as in CP5 i.e. it does not influence industry decision making in the area of Network Availability.

Appendix E – CP6 regulatory framework: Breakdown of Access Charges and Other Single Till Income

The System Operator will not receive any income from Access Charges or Other Single Till Income.

Appendix F – Scorecard Development

This appendix sets out the System Operator functional scorecard definitions and approaches for developing forecasts. Many of the scorecard outputs that we will deliver in CP6 are under development and consultation. As priorities amongst our stakeholders adjust in advance of, and throughout CP6 these will evolve. Underpinning this functional scorecard, we propose a suite of series of scorecards that will be used between the Route System Operator team, and our route and operator customers, including bespoke metrics agreed annually to reflect their needs and priorities.

Metric	Visibility	Definition	Forecasts					Forecast Commentary
Safety and sustainability			**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	
Work-related absence	Tier 1 Functional Tier 2 All directors Tier 3 Route level	The number of absences within the System Operator function where the cause is classified as work related (e.g. work related stress).	41.55	41.55	41.55	41.45	40.90	Forecasts are based on 0.05 days per person per annum, multiplied by the proposed organisational headcount in each year. This target is consistent with our approach for the metric in CP5. Upper and Lower thresholds determined by 5% variance to target.
Health, Safety and Wellbeing Plan	Tier 1 Functional Tier 2 All directors Tier 3 Route level	Delivery of milestones in the function's Health, Safety & Wellbeing plan	TBC	TBC	TBC	TBC	TBC	An annual plan will be developed using survey results, emerging focus areas and feedback from our teams. It is anticipated that there will be a quarterly milestone, generally the delivery of a campaign.
Sustainability	Tier 1 Functional Tier 2 All directors Tier 3 Route level	Number of volunteer days within the System Operator function	203.75	225.40	239.10	262.35	290.08	Forecasts are based on an increasing scale, beginning at 0.25 days per person per annum (consistent with our approach in CP5) followed by an increasing expectation of 10% per annum through to the end of the control period, multiplied by the proposed organisational headcount in each year. Upper and Lower thresholds determined by 5% variance to target.
Real Time Operations			**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	
Impact on train performance (incs)	Tier 1 Functional Tier 2 Cap. Planning Tier 3 Route level	The number of delay incidents associated with 502a delay codes (QA, QM, QQ, QB) with associated PFPI minutes	22,957	22,613	22,273	19,838	19,342	Forecasts are based on a CP5 exit target of 25,720, in the middle of our range. Following CP6 Year 1 (22,957) there is an underlying improvement throughout the Control Period. Potential benefits of improvement programmes upon this trajectory are under review. Upper and Lower thresholds determined by 5% variance to target.
Impact on train performance (mins)	Tier 1 Functional Tier 2 Cap. Planning Tier 3 Route level	The number of direct and reactionary PFPI delay minutes associated with 502a delay codes (QA, QM, QQ, QB)	323838	318980	314196	287393	281645	CP6 minutes have been forecast using historical data from CP4 and CP5 to inform forecasts, alongside the trajectories for delay incidents. Upper and Lower thresholds determined by 5% variance.
Financial Performance			**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	
Finance Performance Measure - Opex (£m)	Tier 1 Functional Tier 2 All directors	Delivery of a finance performance measure outlining actual operational expenditure vs forecast	41.30	41.90	42.60	43.00	42.20	Forecast reflects the proposed operational expenditure within the Strategic Business Plan. Upper and Lower thresholds determined by 1.5% variance
Finance Performance Measure - Capex (£m)	Tier 1 Functional	Delivery of a finance performance measure outlining actual capital expenditure vs forecast capital expenditure	7.70	12.30	21.10	13.30	6.20	Forecast in each year to be generated as programme funding is authorised for the improvement programmes outlined in the Strategic Business Plan through a portfolio approach for System Operator improvements. Upper and Lower thresholds determined by 6% variance
People			**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	
Your Voice Actions	Tier 1 Functional Tier 2 All directors	Delivery of actions within a functional employee engagement plan.	TBC	TBC	TBC	TBC	TBC	An action plan centred on our employee engagement will be created, at this stage anticipated to be informed by our Your Voice engagement survey. The plan will be informed annually by action planning across the function.
Operational Planner Vacancy Gap	Tier 1 Functional Tier 2 Cap. Planning	The number of vacant Operational Planner roles within the Capacity Planning organisation	6%	5%	5%	4%	3%	Forecasts relate to the number of Operational Planner vacancies relative to the organisational size in each year. Our SBP includes a Capacity Planning organisational design which is structured to ensure sufficient resources to deliver the increased volume and complexity of timetabling activity.
Strategic Planning			**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	
Strategic Planning Milestones	Tier 1 Functional Tier 2 S&P Directors Tier 3 Route level	Delivery of milestones in the annual Continuous Modular Strategic Planning programme	TBC	TBC	TBC	TBC	TBC	The annual plan for CMSP will be developed through engagement with stakeholders to understand their needs and priorities. The plan will be disaggregated to Route level and included in our Route based scorecards, with a 'rollup' indicator included functionally.

Metric	Visibility	Definition	Forecasts					Forecast Commentary
Managing Output Change			19/20	20/21	21/22	22/23	23/24	
Transport Scotland Priorities	Tier 1 Functional Tier2 S&P Scotland	Delivery of Transport Scotland priorities	TBC	TBC	TBC	TBC	TBC	The scope of this measure will be agreed annually, with relevant forecasting, through consultation with Transport Scotland.
Subnational Transport Bodies	Tier 1 Functional Tier 2 S&P Directors	Delivery of Subnational Transport Body priorities	TBC	TBC	TBC	TBC	TBC	Through CP5 such priorities have been indicated through project development milestones aligning with the priorities of Subnational Transport Bodies. It is anticipated that such priorities and milestones will be informed on an annual basis through the CMSP Programme, and at points throughout CP6 as Memorandum of Understanding milestones are committed.
Franchise Milestones	Tier 1 Functional Tier 2 S&P Directors	Delivery of milestones in the Franchising programme	3	3	6	2	6	Our franchise milestones have been generated assuming 3 core milestones in each franchising process ultimately leading to an ITT which is supported by the System Operator. Franchise dates have been taken from the July 2017 Rail Franchise Schedule, with the franchising broadly aligning to Strategy & Planning Directors and a 'rollup' indicator included functionally.
Project Development Milestones	Tier 1 Functional Tier 2 S&P Directors Tier 3 Route level	Delivery of Project Development milestones	TBC	TBC	TBC	TBC	TBC	Project development milestones will be included in our plans on conclusion of remits, project plans and funding. These development milestones will reflect the delivery of Memorandum of Understanding milestones supporting early project development. The plan will be disaggregated to Route level and included in our Route based scorecards, with a 'rollup' indicator included functionally.
Event Steering Group Milestones	Tier 1 Functional Tier 2 Cap. Planning	Delivery of milestones in the Event Steering Group activity programme	TBC	TBC	TBC	TBC	TBC	The ESG plan will be contributed to throughout the Control Period as ESGs are formed and a project plan outlining activity towards the Priority Date (D-40) for the relevant event is created. The plan will also include improvement activities surrounding ESG capability and processes.
Production of the Timetable			19/20	20/21	21/22	22/23	23/24	
WTT Production Milestones	Tier 1 Functional Tier 2 Cap. Planning	Delivery of milestones in our WTT Production cycle (excl. ESG)	4	4	4	4	4	Forecast milestones are driven by the delivery of outputs and activities described within the Calendar of Milestone Dates for timetable production, focussing on D-40 and D-26 dates for each timetable. Forecasts will need to be refreshed in the event of change to the Network Code Part D.
TW-12 Informed Traveller Delivery	Tier 1 Functional Tier 2 Cap. Planning	The percentage of schedules requiring adjustment owing to planned engineering works which have been uploaded to downstream systems by TW-12 (12 weeks in advance of the applicable timetable week).	TBC	TBC	TBC	TBC	TBC	Forecasts to be determined, but will relate to the delivery of amended timetables for publication to downstream systems at TW-12. Trends in relation to quality and timeliness of operator inputs to the process will inform the forecasts, as will potential benefits of Capacity Planning improvement programmes.
Timeliness of responses to customer change	Tier 1 Functional Tier 2 Cap. Planning	The percentage of customer variation requests (after timetable publication) responded to within the described timescales in the Network Code	TBC	TBC	TBC	TBC	TBC	Forecasts to be determined following conclusion of metric development, and the opportunity to baseline performance.
Improvement Programmes			19/20	20/21	21/22	22/23	23/24	
Capacity Planning Investment Portfolio	Tier 1 Functional Tier 2 Cap. Planning	Delivery of milestones in the relevant project plan	TBC	TBC	TBC	TBC	TBC	Milestones for the improvement Programmes contained within the scorecard will be forecast following feasibility and early stage development activity.
Improvement initiatives	Tier 1 Functional Tier 2 Policy & Prog.		TBC	TBC	TBC	TBC	TBC	
Delivery to Customers			19/20	20/21	21/22	22/23	23/24	
Customer Advocacy - Operators	Tier 1 Functional Tier 2 All directors Tier 3 Route level	TBC	TBC					The approach to measuring customer advocacy will be output driven, and developed in the lead up to CP6. The indicator will be disaggregated throughout the scorecard system to provide visibility and comparison of engagement levels with individual outputs and areas of the function. An initial baseline will be taken and forecasts developed, including relationships with Improvement Programmes where applicable.
Customer Advocacy - Routes								
Customer Advocacy - Funders								

Appendix G – ORR issues, opportunities and challenges

This appendix sets out the Issues, Opportunities and Challenges as described in the ORR's November 2016 consultation on the System Operator, and how the System Operator has considered them.

The incentives the System Operator faces when trading-off increased capacity use, performance and cost are not currently balanced. This is partly due to the fact that there are currently no accurate measures of available network capacity.

Extensive thinking has been done by industry into an accurate and appropriate measure of available network capacity, including consultancy work commissioned by ORR. At this time, there has been no meaningful, usable, easily understandable metric proposed that could be used in a simplistic fashion on a scorecard to provide an incentive for increased capacity usage (above and beyond customer satisfaction with the way in which capacity is identified).

The System Operator is currently planning a trial of measures, commencing in October 2017, adapted from the ORR's TRL report, and these could be used to inform a narrative update on an annual basis on the levels of capacity available on key areas of the network.

The right balance of incentives on the System Operator comes from having an overall balanced scorecard which accurately reflects the key drivers. This may include straightforward measures for the System Operator's impact on performance and cost whereas capacity will need to be represented by a suite of measures from long term planning, through to timetable production, with customer satisfaction with our processes and behaviours being the ultimate recognition of our ability to inform and make the difficult and appropriate trade off decisions. The proposed governance of the System Operator will have an important role in guiding the scorecard to maintain its balance.

The System Operator's activity of managing the Train Planning Rules and producing capacity studies to inform investment and capacity allocation decisions (by funders or ORR) could be improved.

The System Operator recognises the importance of accurate and up-to-date TPRs in the creation of a zero defect timetable. Our proposals for CP6 continue the intensive focus placed on this by the System Operator throughout CP5. The System Operator SBP outlines the System Operator's plans to improve the granularity of the timetable and to improve the relationship between infrastructure capability, rolling stock capability and the building blocks of the timetable through an industry train plan data programme, and investment in planning system capabilities, which will continue to improve the quality of the timetable.

Additionally, the System Operator is proposing investment in its analysis capabilities and systems to provide quality factual evidence to inform decisions. This is outlined in Section 8 in the SBP.

The System Operator's production of the working timetable could be more effective at unlocking benefits (both in terms of capacity use and performance).

Improving the line of sight between investment decisions and benefit realisation is at the heart of the System Operator's plans for CP6. Section 8 of the SBP outlines the programmes of work and intended outcomes that the System Operator proposes to deliver to improve timetabling systems, processes and capability. In addition to this, the System Operator is proposing improved focus and analytical support for the Event Steering Group process to improve the

industry alignment and actions in the lead up to the timetable development process.

The System Operator has created a new team of people whose role includes the identification of latent capacity in the timetable and the opportunities that might be possible to improve utilisation of capacity or performance through timetable change in lieu or in advance of major investment. More widely, we recognise the need to better identify trade-offs in how capacity is utilised (for example, journey time and performance), and out SBP sets out our plans to improve the tools and capability our teams use to inform this balance with the industry.

The alignment of incentives between the System Operator, Network Rail (in general) and operators in relation to operational performance could be improved.

The alignment of incentives between Network Rail through the Periodic Review and operators through the franchise process is well recognised as sub-optimal. The System Operator and franchise authorities are looking to address this by closer working, seconded System Operator individuals into the franchise teams at DfT and potential sign off of the ITTs. Our forecast activity throughout CP6 in this area is outlined within this SBP, and will be measured in our scorecard. There will be close working between the Route Businesses and the System Operator, directly facilitated by the Route System Operator, so that the customer should not suffer from perceived misalignment of incentives within NR.

Impact of route-level devolution on short- or near-term system operation.

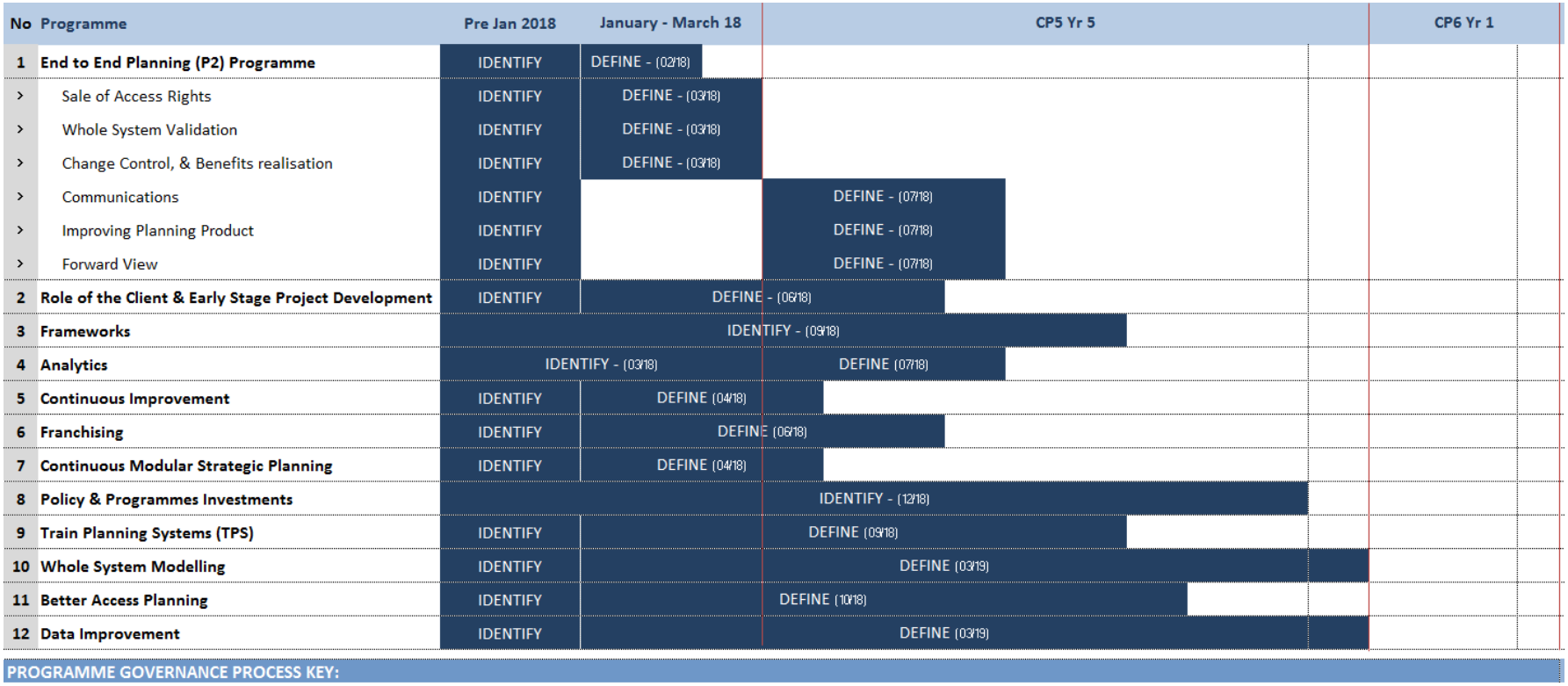
The Route System Operator, as described within the main body of the SBP, will work at the heart of the Route Businesses in order to jointly deliver to the customer short and near term system operation. The Route System Operator will continue to provide support and co-ordination where required to ensure the continued success of short and near term system operation, including as an example, the assurance and measurement of late change to disruptive possessions, as well as leading in the co-ordination of timetabling responses to serious incidents, as outlined in the Management of Sustained Disruption process. The System Operator will continue to develop and implement frameworks for activities such as Access Planning in which the Route Business teams will operate.

Long term network planning: the changing System Operator's role in developing proposals for changes to the network.

The System Operator's role in developing proposals for changes to the network will become more responsive to the needs of decision makers and the quality of analysis and information required to inform these decisions will be increasingly robust and consistent through the organisational and capability improvements identified throughout the SBP. Key to the changing nature of the System Operator's role in this regard is the implementation of the Continuous Modular Strategic Planning process, which will be more flexible and adaptive to incremental development, and more clearly capturing the solutions considered in achieving the outcomes required.

Appendix H – Improvement initiatives & technology portfolio

This appendix outlines the timescales for the ongoing development of our improvement initiatives and technology portfolio. A schedule for remaining stages will be developed on conclusion of the definition stage.



PROGRAMME GOVERNANCE PROCESS KEY:

IDENTIFY *- Agree remit and define outcomes*

DEFINE *- Conduct feasibility, define scope , benefits, resources, budget and identify risks. Obtain sign off of programme/project brief*

DESIGN & PLAN *- Agree detailed plan, transition arrangements and appoint resources*

DELIVER *- Develop and deliver outcomes within appropriate governance, managing risk, budget and plan, providing periodic reporting*

TRANSITION *- Conduct transition of outputs into business and realise benefits*

CLOSE *- Conduct lessons learned and apply structured continious improvement*

Appendix I – Glossary

Term	Meaning	Term	Meaning
A&F	Analysis and Forecasting	F2N	Felixstowe to Nuneaton
APM 3PM	Association of Project Management; Portfolio, Project and Programme management model	FNPO	Freight and National Passenger Operator Route
ARS	Automatic Route Setting	FOC	Freight Operating Company
ATOC	Association of Train Operating Companies	GOB	Gospel Oak to Barking
ATTune	ATTune tool is developed to support identification of conflicts in the timetable	GRIP	Governance for Railway Investment Projects
BAME	black, Asian, and minority ethnic	HLOS	High Level Output Specifications
BAU	Business As Usual	HS1	High Speed One
BTQEZ	Bristol Temple Quarter Enterprise Zone	HS2	High Speed Two
CAPEX	Capital Expenditure	HSR	High Speed Rail
CDM	Construction Design and Management	IIA	Initial Industry Advice
CMSP	Continuous Modular Strategic Planning	IM	Infrastructure Manager
CoP	Code of Practice	ITT	Invitation to Tender
CP5	Control Period 5 (2014-2019)	Legion	Dynamic pedestrian simulation software used to carry out our station capacity analysis
CP6	Control Period 6 (2019-2024)	LEP	Local Enterprise Partnership
CP7	Control Period 7 (2024-2029)	LNE&EM	London North Eastern and East Midlands route
D&I	Diversity and Inclusion	LNW	London North Western route
DfT	Department for Transport	LTPP	Long Term Planning Process
DR	Digital Railway	MD	Managing Director
ECML	East Coast Main Line	MML	Midland Main Line
ESG	Event Steering Group	MOIRA	A passenger demand forecasting system supporting our economic analysis and forecasting
ETCS	European Train Control System	MoU	Memorandum of Understanding
EWR	East West Rail	MSP4NR	Managing Successful Programmes for Network Rail - standardised project management methodology for Network Rail

NLL	North London Line	SO	System Operator
NR	Network Rail	SoAR	Sale of Access Rights
NPR	Northern Powerhouse Rail	SOBC	Strategic Outline Business Case
S&P	Strategy and Planning	SoFA	Statement of Funds Available
NTF	National Task Force	SOfff	System Operator Fit for the Future
ONW	On Network Works	SRIPAG	Scottish Rail Industry Planning Advisory Group
OPA	Operational Planning Assistant	SSPG	Scottish Strategic Planning Group
OPEX	Operating Expenditure	SRTs	Sectional Running Times
OPSG	The Operational Planning Strategy Group	STP	Short Term Planning
ORR	Office of Rail and Road	TF	Transport Focus
POG	Planning Oversight Group	TfL	Transport for London
PPS	Possession Planning System	TfN	Transport for the North
PR18	Periodic Review 2018	TOC	Train Operating Company
PSP	Principal Strategic Planner	TPRs	Timetable Planning Rules
PTEs	Passenger Transport Executives	TPS	Train Planning System
R&D	Research and Development	TRIP	Timetable Rules Improvement Programme
RACI	A responsibility assignment matrix (also known as RAM Matrix)	TS	Transport Scotland
RailSys	Capacity & Capability modelling software used to support analysis on rail capacity	TT	Timetable
RDG	Rail Delivery Group	TW-{x}	The number of weeks prior to a timetable week commencing.
RFG	Rail Freight Group	UKIM	UK Infrastructure Managers
RFOA	Rail Freight Operators' Association	W&W	Wales and Western
RIA	Railway Industry Association	WACC	Weighted average cost of capital
RIPG	Rail Industry Planning Group	WCML	West Coast Main Line
RMD	Route Managing Director	WebTAG	Transport Analysis Guidance
ROSCOs	Rolling Stock Owning Companies	WBPF	Whole Business Performance Framework
RSIT	Route Services Information Technology	WTT	Working Timetable
RSSB	Rail Safety and Standards Board		
SBP	Strategic Business Plan		
SNTB	Sub National Transport Body		