

LNW Route Route Strategic Plan

Delivering for our customers

*Template V2.05
19th January 2018 v6*

Key changes since 8th December 2017

Section	Subject	Change
2	Stakeholder priorities	New section on passenger needs added
3	Safety	LTIFR target for end of CP6 changed from 0.42 to 0.17
	Performance	On Time trajectories added
	18/19 Scorecard	Scorecard revised to align with latest agreed with stakeholders
	CRI	Forecast profile revised to reflect reset at beginning of CP6
	Regulatory floors	New section added after the Scorecards
5.1	Headroom	Route headroom and description added after tables
6	Customer Focus & Capacity Strategy	New section added on System Operator
7.3	Maintenance delivery	Additional text added regarding maintenance access to the track and improvements to welfare facilities
7.4	Project delivery	Updated to incorporate recent developments on workbank visualisation and contracts for CP6
7.5	Supply Chain	Section updated to include recent supply chain workshop
7.9	Uncertainty	Entire section updated to reflect proposed expenditure in Section 5.1 and revised income forecasts
8.1	Safety	Section updated to reflect new LTIFR target and include our LNW Six Point Plan
8.5	Diversity & Inclusion	Target for gender diversity added
10	CP6 Regulatory framework	Entire section updated
Appendix E	CP6 Regulatory framework	Entire section updated
Appendix I	Regulatory Floors	New appendix added to include methodology used to calculate the floors

Various minor changes have also been made to other sections based on feedback received since 8th December 2017 and updated information on long run forecasts etc.

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1. Foreword and summary



M. Frobisher

Martin Frobisher
Route Managing Director
LNW Route

Foreword by Martin Frobisher

London North Western (LNW) Route is the economic backbone of Britain. The West Coast Mainline, Europe's busiest mixed-use railway, connects six of Britain's eight largest cities. An efficient and reliable service on the Route is crucial to our success as a nation.

While passenger demand for rail travel is growing at 1% a year nationally, on LNW it is growing at 7% a year. This plan for Control Period 6 (CP6 – 2019 to 2025) continues to sustain that growth whilst delivering strong improvements in passenger satisfaction.

LNW Route, the backbone of Britain, has a team that delivers. In CP5, we have achieved great performance for our customers and have developed ever more collaborative ways of working to continue to improve and get better every day. I am determined that we will continue this in CP6 and remain one of the best performing Routes in the country. We will do this against the backdrop of more trains, more passengers and freight, and facilitating the construction of HS2.

I am also determined that we will become more efficient and make the most effective use of the funding provided in CP6, as well as continuing to improve the safety of the railway for our passengers, public and workforce.



My vision for LNW Route in CP6 is:-

“One team, safely delivering brilliant services for customers and taxpayers”

This plan documents our strategy for successfully realising this vision.

Summary

1.1 One Team

We are creating one all-encompassing team which works collaboratively across all parts of the regional transport industry. We will work closely with the newly elected city Mayors and their teams to provide a seamless service for customers across all modes of transport. This integrated transport approach will include planning rail work whilst also considering work planned by Highways England and major public events. We will work closely with Transport for the West Midlands and Midlands Connect to enhance the rail commuting options into the City of Birmingham in order to ease the impact of HS2 construction on the road network.

We have a long-term strategy to build engagement by creating an environment within Team LNW which is caring and inclusive. This will deliver a high performing team which works across industry boundaries. There will be a total commitment to deliver better every day through structured continuous improvement.

The following sections of this plan explain how we will improve the culture and the capability of the organisation. We will realise benefits from a strong diversity and inclusion strategy. We will deliver efficiency through a successful industrial relations strategy and we will develop a pipeline of talent for the future.

1.2 Safety

LNW, Backbone of Britain, is proud to be a part of the safest railway in Europe and we will build upon these strengths. This plan will deliver improvements to passenger, public and workforce accident risk and to the environment

During CP5, Team LNW has reduced the workforce lost time injury frequency rate (LTIFR) by 30%. We will continue to build upon this success and will reduce it by two thirds by the end of CP6 by continuing to focus on slip, trip and falls and manual handling, the common causes of accidents, and maturing our safety culture and leadership. We aspire to achieve a 0.17 LTIFR in line with other world class organisations such as DuPont.

Our plan also includes some ambitious safety initiatives including a commitment to safer trackside working by abolishing Victorian lookout warning with flags as the sole method of protection for our workforce. We will also change the focus of our workforce safety programme by placing a greater emphasis upon our colleague's health and wellbeing which includes our aim to become industry leaders in managing mental health.



1.3 Delivering

LNW, Backbone of Britain, continuing to deliver successfully during CP6 is reliant upon stability of our programme. We have shown great attention to detail preparing the CP6 workbank. The programme has been meticulously prioritised and is detailed in Section 5 of this plan.

A strong plan enables us to offer certainty to our supply chain. In return they will enable us to hit our milestones and achieve substantial gains in efficiency. We will continue to deliver improvements in value for money through structured continuous improvement.

We will enable the successful delivery of the HS2 project, the most important investment in the Route in CP6. We will enable the project to meet its commitments to government whilst making its construction seamless to the travelling public. We recognise that continued growth in demand on the West Coast Main Line is building the market for HS2 once the Euston – Birmingham phase is complete. Success today is breeding success for tomorrow.

1.4 Brilliant service for Customers

Team LNW will deliver brilliant service to customers through rock solid asset management. We will become fully compliant with ISO55000 and will be independently accredited to this standard. We will make investments in asset remote condition monitoring and improving our engineering decision support tools. We will provide improvements in infrastructure reliability to each and every train operator within the Route.

Team LNW will maintain its strong relationships with its customers by continuing to deliver great, and ever improving, results. We will also continue to develop partnerships with our customers which will be delivered through a structured ISO44001 framework.

We will also deliver a proactive and innovative communications campaign within the industry, to our lineside neighbours, and to the travelling public.





1.5 And Taxpayers

Our plan details how we will achieve a culture of cost efficiency for the taxpayer. We have been very successful in developing a positive safety culture. We will apply these same techniques and levers to achieve a culture of cost efficiency. Goals and objectives will be more clearly defined than ever before. Efficiency will be rewarded and inefficiency will be sanctioned. There will be ever present reminders of the need for cost efficiency in our workplace.

Being easy to deal with is an important element of Team LNW's plan. We will improve our business processes. This will make it easier for other organisations to invest in the railway. We have established a dedicated business development team to work closely with external organisations to maximise this opportunity.

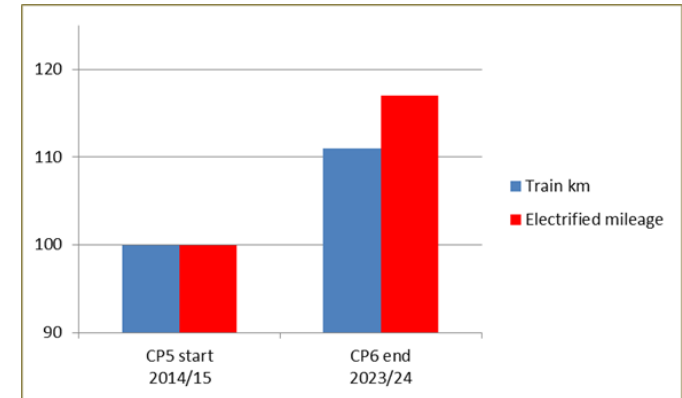
All investments and renewals work will be based upon a sound business case, with clearly defined benefits which will be tracked more closely. We have set challenging targets for efficiencies in CP6 which are described in section 7 of this plan and will work closely with our teams, delivery partners and suppliers to achieve them.

Team LNW

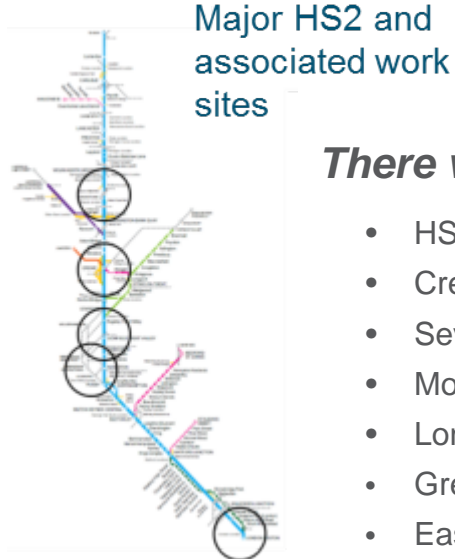
“One team, safely delivering brilliant services for customers and taxpayers”

LNW Route, the Backbone of Britain, will be a bigger business in CP6

- Over 250 track miles of new electrification, new routes to Oxford and capacity increases in the North
- More trains to operate as a result of new franchises, open access operators and completion of the Northern Hub, and four new depots to be built on LNW to accommodate additional rolling stock
- Intermodal freight growth and HS2 mass haul strategy will increase freight volumes on West Coast South and branches
- Worcester area will transfer into the Route at the start of the Control Period



Increase in train km and electrification mileage over CP5 & CP6 (CP5 start = 100)



There will also be some huge challenges in CP6

- HS2 will be under construction on and around the Route at numerous locations
- Crewe resignalling and remodelling will be a major project on the West Coast main line
- Several new train fleets will be introduced and will take time to achieve expected reliability levels
- More trains will mean greater wear and tear on our infrastructure
- Longer operating days will reduce non-disruptive access opportunities
- Greater customer expectations in CP6 to improve on current performance
- East West Rail Phase 2 will be under construction with a key interface at Bletchley

2. Stakeholder priorities

Who our stakeholders are

Key Train Operators	Other Train Operators	Freight Operators	Passenger Transport Executives	National and Local Government, and Industry Groups	Others
Virgin West Coast West Midland Trains Chiltern Railways Merseyrail Transpennine Express Northern	Cross Country Arriva Trains Wales East Midlands Trains Caledonian Sleepers Arriva Rail London GTR Southern Great Western Railway West Coast Railway Alliance Rail London Underground	Freightliner DBCargo Direct Rail Services GB Railfreight Colas Rail	Transport for London Transport for West Midlands Transport for Greater Manchester Merseytravel	Department for Transport Transport for the North Rail North West Midlands Rail Midlands Connect County Councils City Councils City Regions Local Authorities Rail Delivery Group Transport Focus	ORR Passengers Community Rail Groups Lineside neighbours Local Enterprise Partnerships RMT/ASLEF/TSSA British Transport Police Highways England Suppliers

How we engage with our stakeholders

Topic	Engagement approach	Route lead	Stakeholders involved
General	Level 1 meetings Alliance Boards	RMD	All LNW key TOCs and all PTE's on LNW Route
	CP6 Stakeholder Workshops	RMD	All stakeholders including suppliers
	Customer Account Management	HoP&CRM	All LNW key TOCs
Performance	Performance Strategy Groups Performance Councils Performance Assurance Groups TSR conferences	HoP&CRM	All LNW key TOCs
Network improvements and changes	Quarterly RIRG meetings Enhancement scheme Boards and delivery group meetings	PSP RMD/RDD	All operators
Access Planning	Access Planning process	Head of Planning	All operators
Timetable planning	Via System Operator	PSP	All operators
Stations & depots	Local Delivery Groups	DRS	All SFOs
Cross-Route	Joint Level 1 meetings Multi-Route Alliances Joint working with FNPO team Access planning workshops	RMD	Operators

How stakeholder needs have been prioritised

Stakeholder needs have been considered in our baseline operations, maintenance and renewals proposals outlined in this plan. We anticipate the CP6 Enhancement programme addressing further needs around capacity and growth and these will be described separately by Network Rail's System Operator. Following meetings in 2016 and workshops in 2017, we are continuing dialogue with stakeholders to capture their needs in a consistent manner and are exploring approaches we could adopt to balance the various priorities we have been advised of to date (See Appendix G). We are not yet able to commit to firm plans until the funding levels for CP6 are confirmed but have proposed a provision to specifically address stakeholder needs over and above the activities proposed in this plan (see Appendix D part 2).

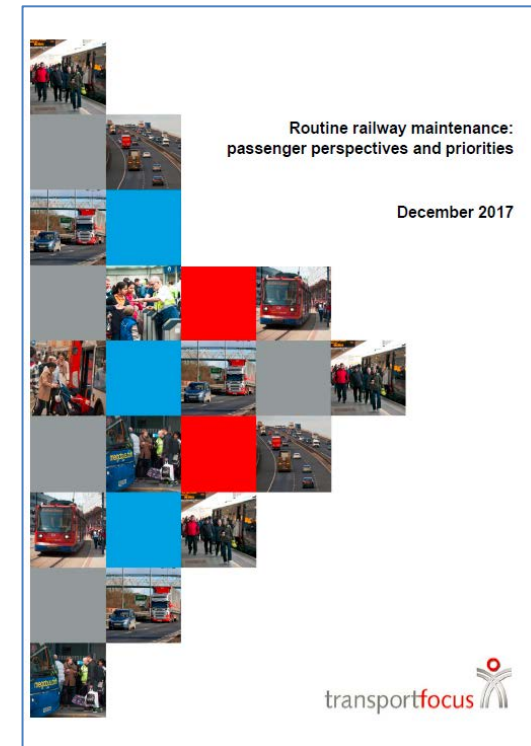
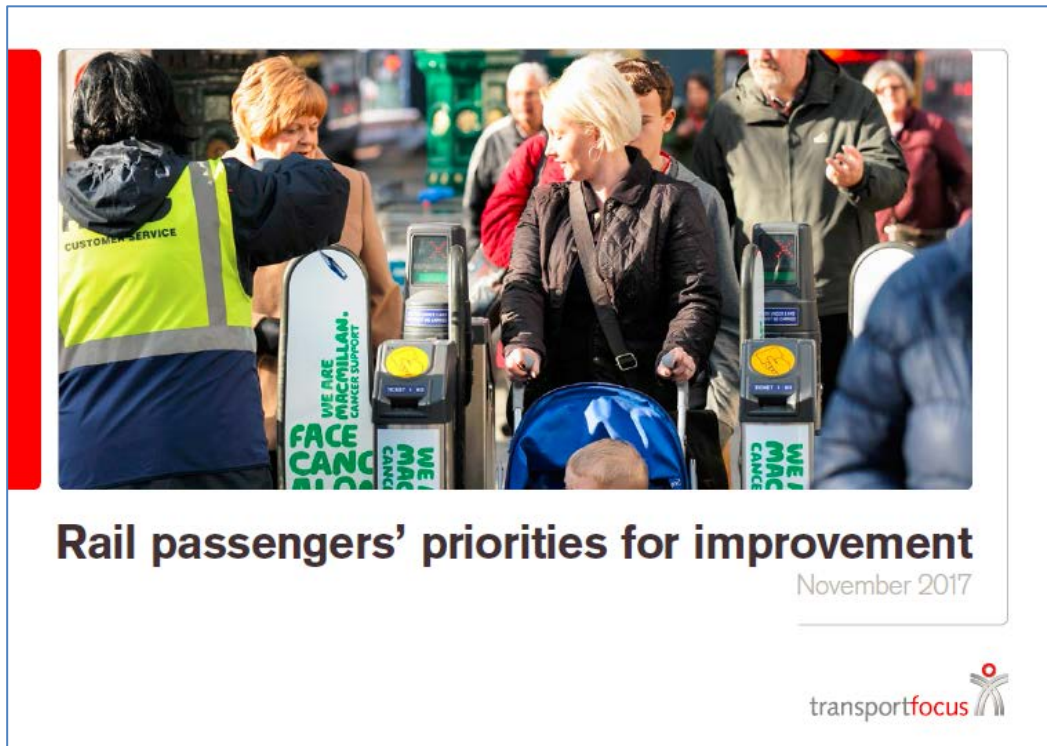
As part of our developing business planning process we will update our assessment of stakeholder needs and develop our approach to maintaining visibility of them, balancing between different stakeholders, having dialogue on their feasibility in the short or longer term, and how our asset strategies can evolve to better align with them. This will include annual workshops with stakeholders aligned to our business planning cycle.

The results of the prioritisation of needs from the workshops

Customer	Prioritised needs	Extent can be addressed
DfT	Deliver capacity improvements to time and budget	Will be part of the CP6 Enhancements Delivery Plan
	Accommodation of train paths specified in franchises	In recent franchises, more paths than the infrastructure can reliably accommodate have been specified and hours of operation have increased. The latter will impact on white period durations used for maintenance
	Delivery of performance levels for franchises	Our view on likely performance levels that are deliverable in CP6 in the context of the scale of expenditure outlined in this plan and the events and changes forecast over the Control Period are included in Section 3
	Support delivery of HS2	Fully accommodated with regards to HS2 whilst impacts on LNW Route continue to be better defined and mitigated. We will also integrate HS2 activities with our planned activities to better co-ordinate access and supply chain requirements
Train & Freight operating companies	Achieve agreed performance targets	Joint strategies with each operator to allow appropriate targets to be set and realistic plans to be implemented. Our proposed forecasts for CP6 are included in Section 3 and our plans to achieve them are in Appendix A
	Minimise DPI	
	Invest in stations	Within this plan, our ability to invest beyond Long Term Charge levels is limited. However, we have increased our minor works and reactive maintenance budgets for stations to better address faults and other issues in CP6. Station improvements are an area of key focus for our commercial strategy in Section 9
	Improvements with renewals	Opportunities for improvement, removal of PSRs and addressing pinchpoints will be explored wherever possible in conjunction with our stakeholders. An example includes Birmingham New Street Resignalling in which we will raise the departure speed from 10mph to 15mph as part of the renewal scheme in CP6. A specific fund to allow more pinchpoints to be addressed has been included in Appendix D as a recommendation for further targeted funding or use of headroom in CP6
	Reduce journey times e.g. PSR removal	
	Address pinchpoints and other non-condition asset issues	
	Train planning resources	Ongoing discussion with capacity planning teams to support the provision of further resource
	Cross Route liaison	Expansion of our access and logistics team to encompass the whole Route and to address cross route and diversionary issues in advance of national access planning timescales. Section 6.7 included in response
Availability of diversionary routes	By NRT and covered in their plan for CP6. A summary is included in Section 5.2.2 below	
SISS at stations		
Passengers	Improved passenger handling during disruption	Building on our arrangements with HS2, we are proposing including this as an aspect in our revised access and logistics team activities in CP6 as described in Section 7.2
PTEs and local authorities	Deliver better stations and Improve network capacity	This is an area of key focus for our commercial strategy in Section 9 and for Enhancements

Prioritisation of needs of passengers

Transport Focus have published two useful reports highlighting passenger perspectives and priorities. These are their ‘Rail Passengers’ Priorities for Improvement’ research published in November 2017 and ‘Routine Railway Maintenance: Passenger Perspectives and Priorities’ published in December 2017. The former research also identifies passenger priorities for each Network Rail route and the results for LNW Route are included below. While improved performance appears less important on LNW than for passengers nationally (in part because train factors like cleanliness and toilets are higher), the ‘core product’ is still key i.e. getting a seat (relies on network capacity and train frequency) and good train performance (more trains on time, less disruptions or cancellations).



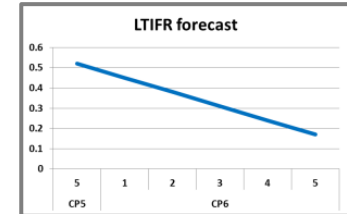
How these priorities link to short and long term route objectives

Prioritised needs	Short Term objectives (inc Customer Scorecard)	Long Term objectives
Delivery of capacity improvements to time and budget	Milestones included to track delivery to agreed timescales. Budget adherence to be monitored	Secure funding for the proposed Enhancements in CP6 to increase network capacity Route governance structure to be upgraded to focus attention on achieving timely delivery
Accommodation of train paths specified in franchises	Work collaboratively with Operators to achieve best outcome	Greater dialogue and liaison with DfT about appropriate franchise specification
Delivery of performance levels	Forecasts for CP6 proposed in Section 3 and on Scorecard	Agree joint targets and plans with Operators
Support delivery of HS2	Active involvement to develop industry solutions and minimise impacts	Accommodation of HS2 services on LNW Route in CP7
Achieve agreed performance targets Minimise DPI	Forecasts for CP6 proposed in Section 3 and on Scorecard	Agree joint targets and plans with Operators and update on a regular basis
Invest in stations	Expenditure increased in CP5 with greater ability to address faults. SSM included on Scorecard	Secure additional investment in station from other sources as described in Section 9
Reduce journey times Address pinchpoints and other asset issues	We will facilitate these when undertaking our renewals	Secure additional funding to support improvements to the railway network either through the Regulatory Process or from other sources as described in Section 9. To also become key elements in future Route Studies undertaken by the System Operator
Train planning resources	Better co-ordination with System Operator team	Consider developing own resource base within LNW Route to address this issue
Cross Route liaison Availability of diversionary routes	Continue to improve approach to access planning by expanding coverage of LNW South access planning & logistics team	Include strategic access planning in revised process that addresses these issues in a co-ordinated manner with other routes and operators
SISS at stations	Visibility of current plans from NRT	Better integration with NRT
Improved passenger handling during disruption	Expanding coverage of LNW South access planning & logistics team	Include in our CP6 strategic access planning process to make business as usual
Deliver better stations and improve network capacity	Facilitate when undertaking renewals and Enhancements. Enhancement milestones achievement included on Scorecard	Secure funding for the proposed Enhancements in CP6 to increase network capacity Target bringing in investment in to LNW Route in this area
Making the most of HS2	Facilitate wherever possible	Be ready for CP7 when HS2 service commence operation on LNW

3. Route objectives

Safety

Our safety, health and environment objective is to reduce workforce, passenger and public harm and environmental risks. For workforce safety, we are aiming for a reduction of two thirds in the workforce Lost Time Injury Frequency Rate (LTIFR) over CP6 to 0.17. This target has been set to reflect Network Rail's national aspiration to benchmark ourselves against other industries who lead on safety. However, the criteria that other such industries use varies from how Network Rail currently measures LTIFR. As a result it is recognised that there will need to be a level playing field with which to compare NR's LTIFR, which will require changes to the definition of what incidents are counted as LTIs in Network Rail.



Reducing our LTIFR to 0.17 is a challenging aspiration in an environment that will be busier and in which we will be undertaking more maintenance and refurbishment in potentially shorter white periods. We will achieve this by undertaking a proactive approach to risk management by building on the close call process, upskilling our teams in understanding, identifying and controlling risk in line with the Enterprise Risk Model and underpinned by a consistent assurance framework. We will also continue to mature our Route safety culture and leadership by undertaking culture climate surveys, setting clear safety objectives for all teams and continuing with robust safety conversations.



We will also achieve a reduction in workforce harm by improving access points, walking routes and the trackside to reduce slip, trips and falls, reducing manual handling risks, upgrading safety communications, using technology and improving electrical safety to reduce the need to go trackside and continuing to manage our driving risks. To improve safer trackside working we will also abolish the Victorian means of providing warning with flags as the sole method of protection for our workforce and reduce the risk from on-coming trains.

We will also place a greater emphasis upon our team's health and wellbeing by undertaking a number of initiatives, including better management of mental health, fatigue, addressing respiratory and Hand Arm Vibration risks, providing adequate welfare and developing a caring culture. Improvements to our workforce safety will be undertaken collectively with our workforce and trade union health & safety representatives.

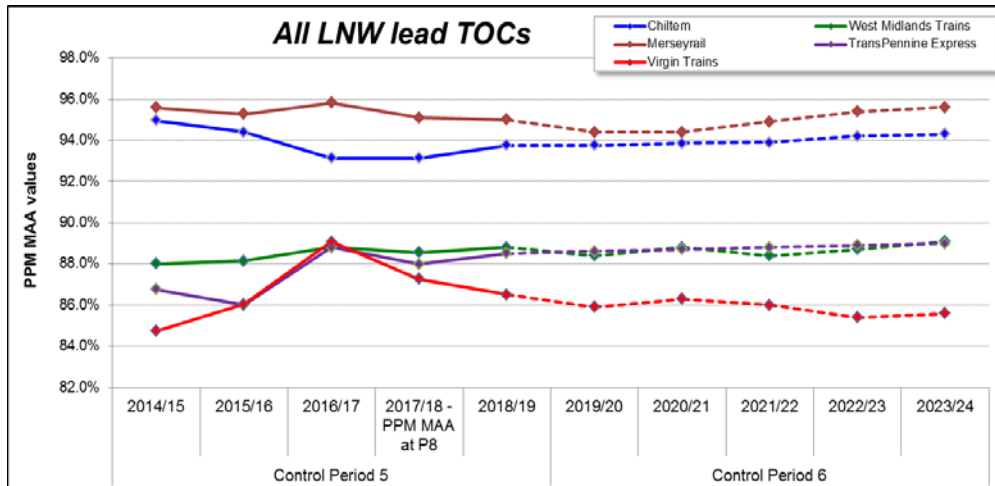
System safety risks to reduce harm to our passengers and members of public will continue to be a priority and we are committed to having an asset management plan in place for each of our level crossings, continue to risk assess, inspect and maintain existing level crossings, and develop appropriate mitigations where feasible. Station safety, and in particular risks from the platform train interface, will be managed collaboratively with our train operators and includes a range of behavioural and engineering solutions. Route crime including suicides and trespass will also be managed jointly with train operators as well as a wide range of industry partners to implement both technological and educational initiatives.



We plan to operate an Environment Management System (EMS) compliant to the clauses of ISO14001:2015 and move towards an integrated management system. This will be delivered by using a high level structure for Management Systems and use the LNW MSP4NR governance framework. We will also better understand our waste processes and energy usage by recruiting dedicated staff to deliver improvements across the Route.

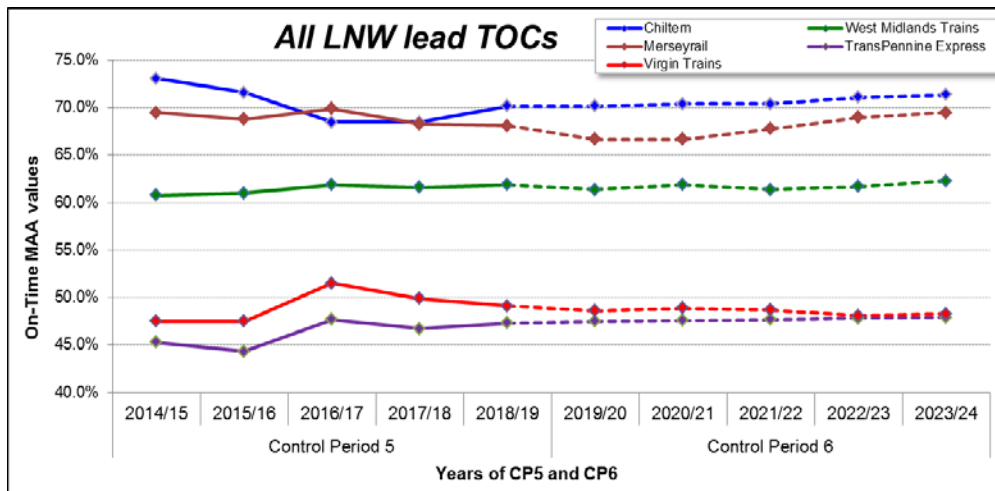
Train performance

We have developed our performance trajectories for CP6 by reviewing events that are forecast to occur and the predicted level of infrastructure performance that we will be able to sustain with the proposed maintenance and renewals proposals included in this plan. A summary of the key events and risks to performance is included in Appendix C. Our forecast of the overall trends across CP6 are as follows.



We are forecasting a flat trajectory for PPM and On Time over the first 2 years of CP6 for Chiltern to stabilise performance, with then a steady increase from 2021/22 onwards.

We have reduced our target PPM and On Time for Virgin West Coast to account for the removal of the Public Book timetable allowances in CP5. Public Book time is the differential between the publicly available Great Britain timetable and the industry working timetable at destination. Removal of these differentials, which for Virgin routes were anything between 1 and 5 minutes has resulted in an increase in PPM near misses and a consequential negative effect on performance figures. The full impact of HS2 remains unclear on all operators using the south end of LNW Route but will cause disruption throughout CP6 and we have also included a slight dip in profiles in 2021/22 to reflect the risks associated with the final stage of Birmingham New Street resignalling.



Both these factors plus the introduction of new fleets combine to mean that we are forecasting that we cannot meet the franchise targets for PPM for West Midlands in CP6. There will be some recovery in 2020/21 and then steady increase through the last 2 years to approach the franchise targets.

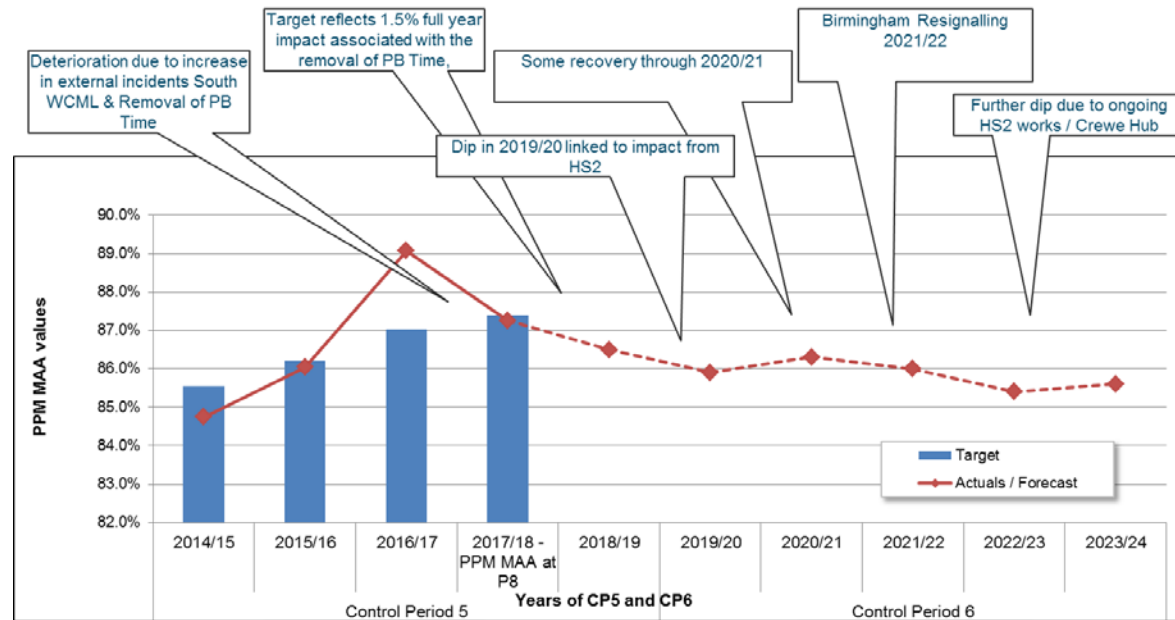
On Merseyrail we are forecasting a decline as a result of their new fleet introduction before recovery through the remaining 3 years of CP6 to remain above their franchise obligation, whilst on Transpennine Express we expect a steady improvement but will be impacted by enhancements (particularly Transpennine Route Upgrade and ECML works), timetable changes and fleet issues in the early part of CP6. We envisage a steady increase through the last year of CP6 but our proposed PPM trajectory remains 1.2% below their franchise target.

We will use the CP6 metrics for reporting; depending on agreement with operators these will be included on the Level 2 scorecards and as the DfT progressively change the franchise targets to On Time measures, we will adopt them accordingly.

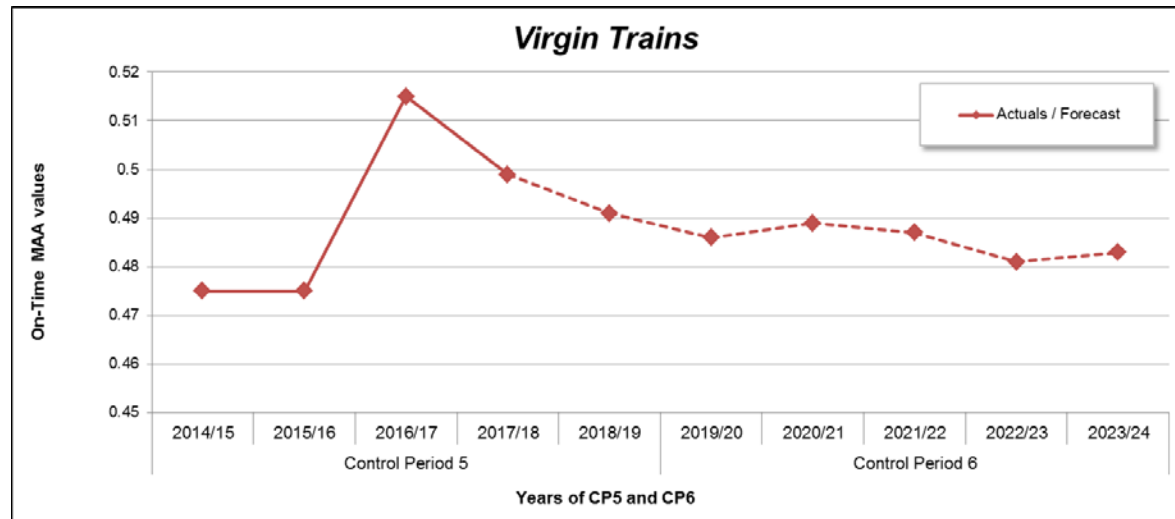
At this stage, none of our forecast performance trajectories have been formally agreed with our operators. We have met with each of our lead operators to discuss our proposed performance targets at both Director level and with operator performance leads. Whilst all operators appreciated the logic applied, in some cases there remains a disconnect between our proposal and operator aspirations and/or franchise obligations. We have agreed that these discussions will continue at our Level One meetings. We will review the detail included under Key Constraints, Risks and Opportunities in Appendix A to validate or adjust our proposals and agree appropriate joint action plans to support their achievement acknowledging that Network Rail form part of the overall picture with Operator-on-Self and Operator-on-Operator contributions also. Targets will be formally agreed with operators on an annual basis as part of the joint scorecard process.

Performance forecasts for Virgin West Coast

PPM actuals for CP5 and forecast for CP6

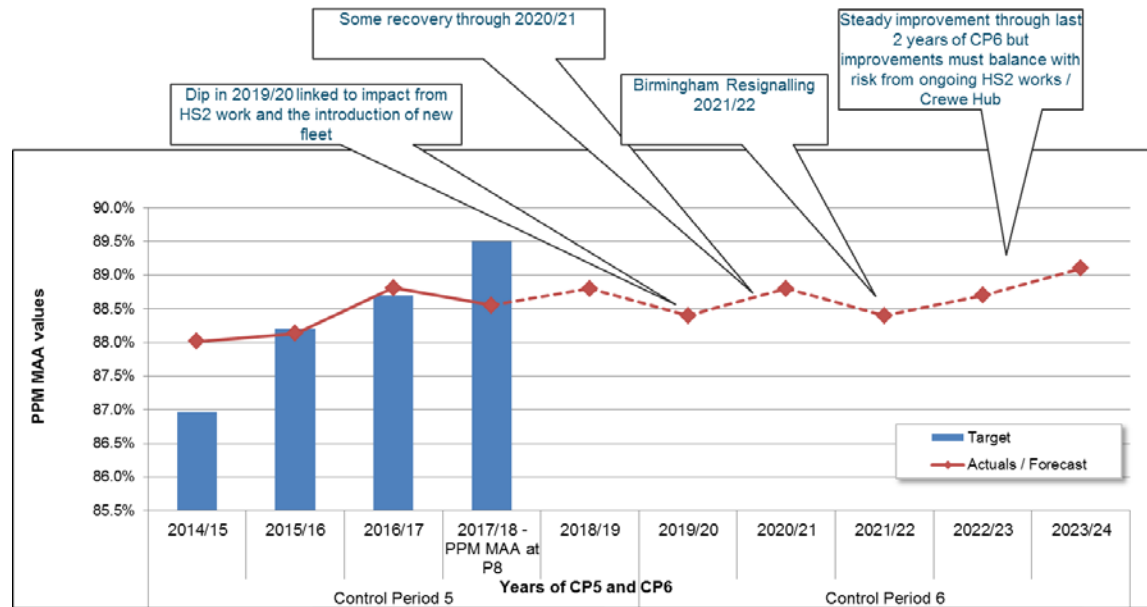


On Time actuals for CP5 and forecast for CP6

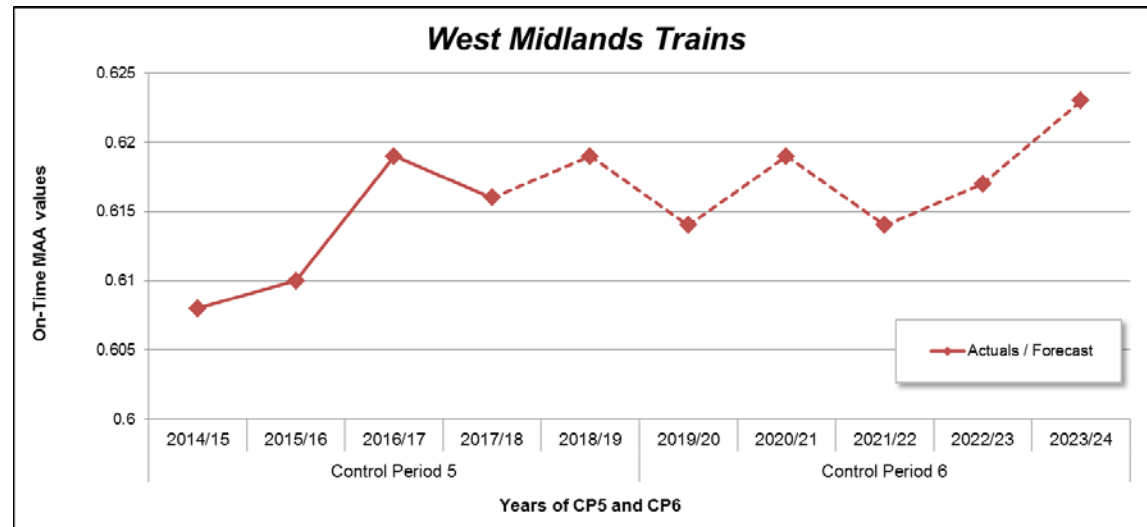


Performance forecasts for West Midlands Trains

PPM actuals for CP5 and forecast for CP6

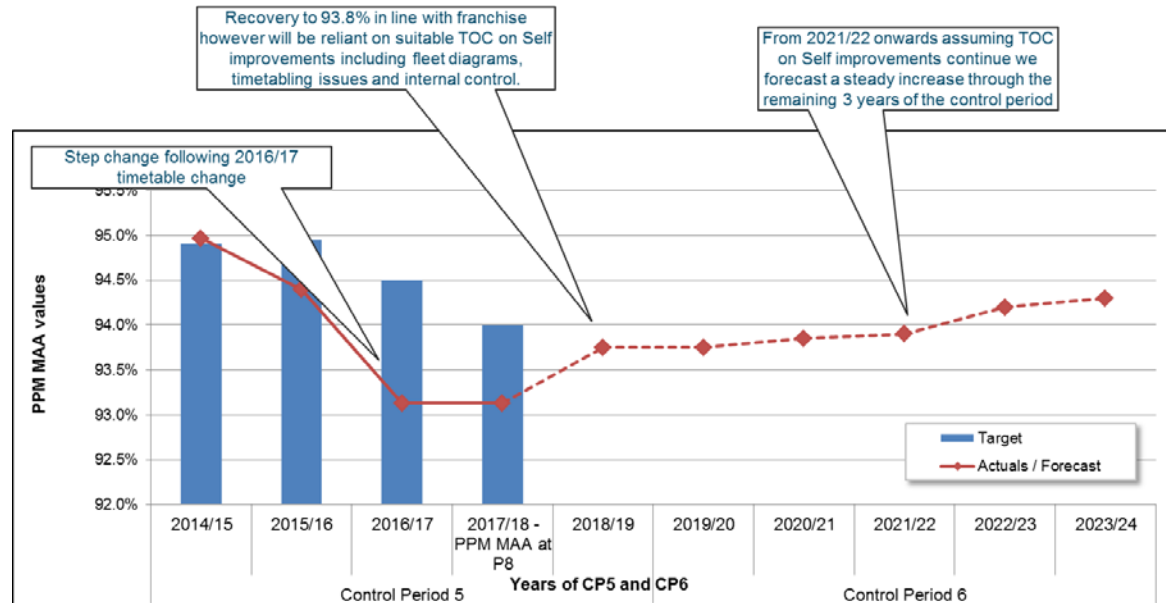


On Time actuals for CP5 and forecast for CP6

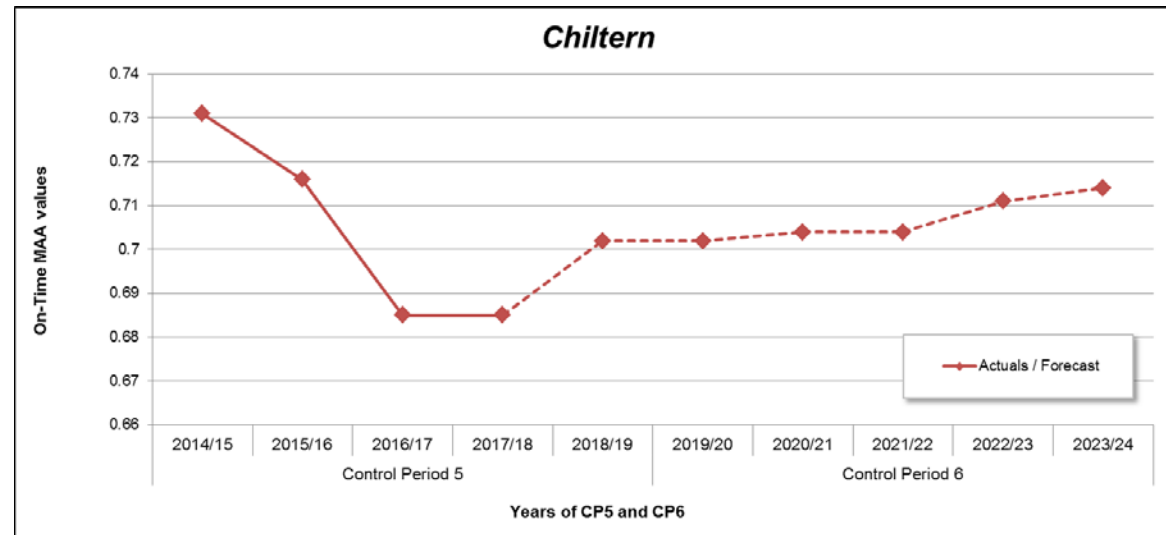


Performance forecasts for Chiltern Railways

PPM actuals for CP5 and forecast for CP6

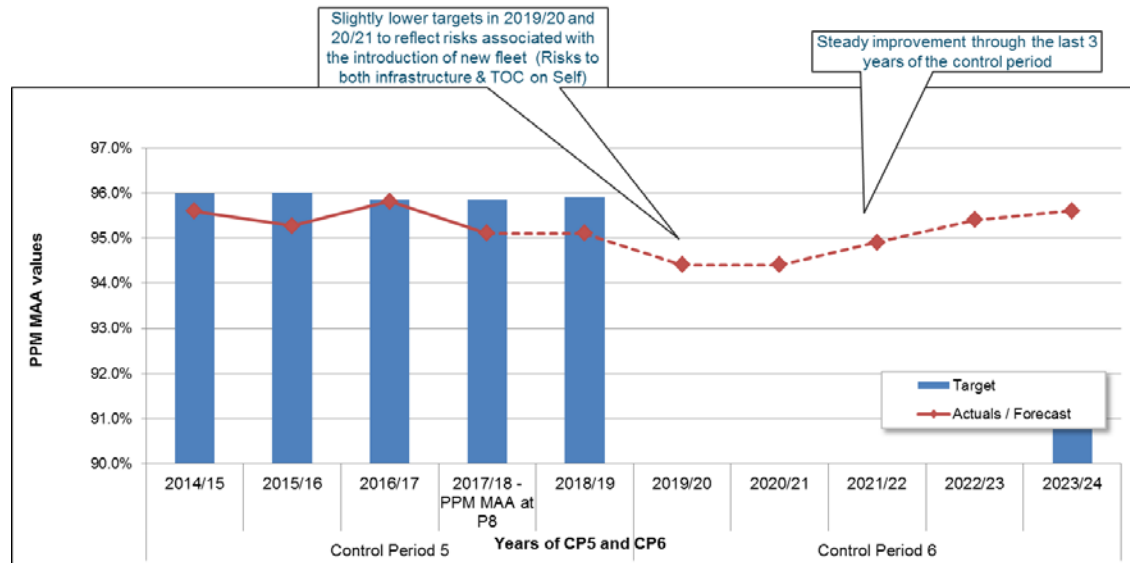


On Time actuals for CP5 and forecast for CP6

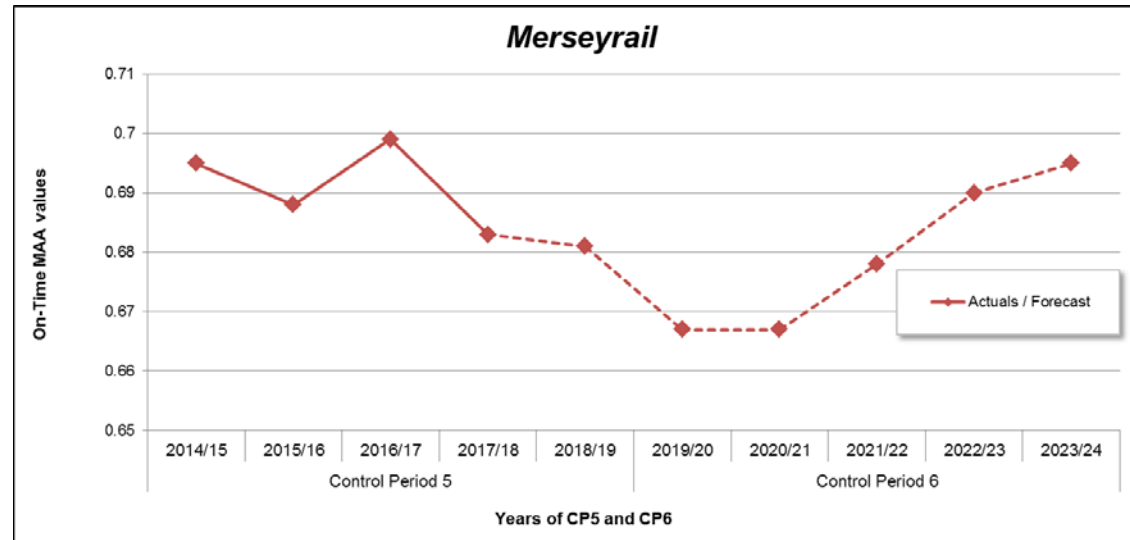


Performance forecasts for Merseyrail

PPM actuals for CP5 and forecast for CP6

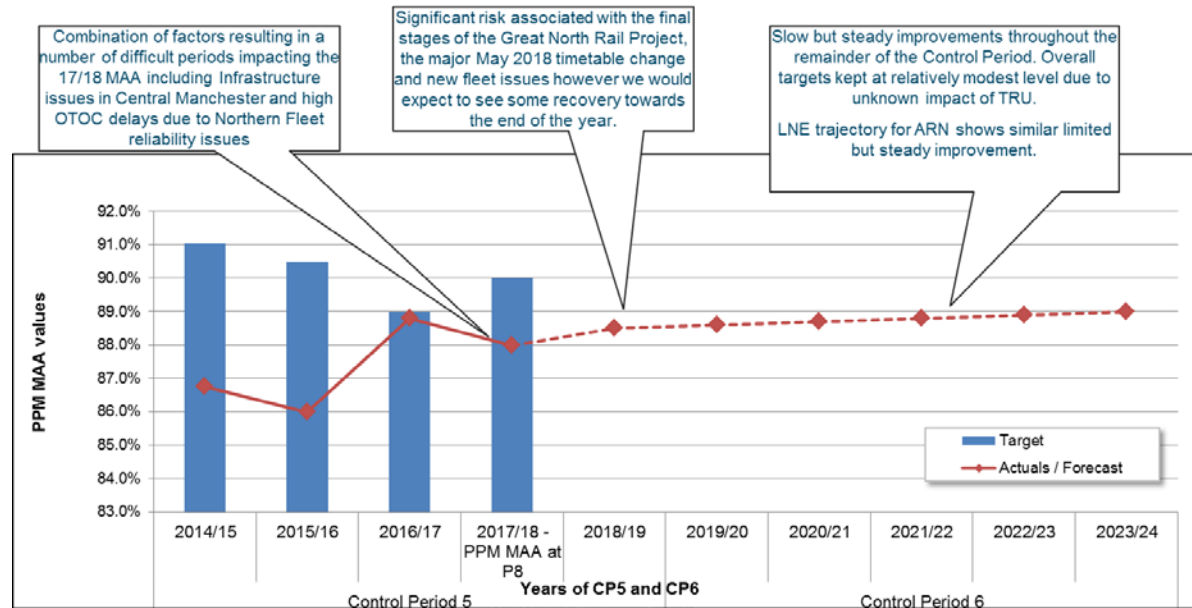


On Time actuals for CP5 and forecast for CP6

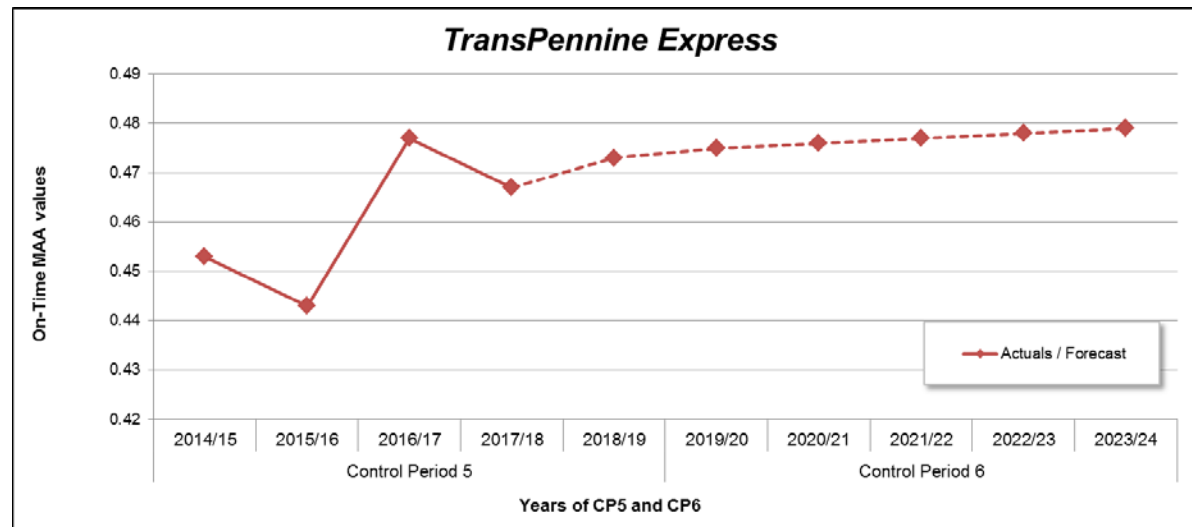


Performance forecasts for Transpennine Express

PPM actuals for CP5 and forecast for CP6



On Time actuals for CP5 and forecast for CP6



Locally Driven Customer Measures

These measures will be agreed each year in CP6 with our customers. We will be responsive to their requirements, work collaboratively and jointly endorse how we are going to monitor the chosen aspects. It is of note that the franchises for 3 out of 5 of our Key TOCs change before or during CP6 and these measures will fluctuate depending on what the franchise stipulates as a focus for the new companies. We intend to engage proactively with our TOCs or FOCs in developing strategies for overall performance and capacity in CP6 with the objective of achieving a high performing railway by working closer with our customers, understand and mitigate risk better and to embrace new technology quicker by making LNW 'trial central' for innovative ideas and approaches. In order to facilitate this we have included a specific provision to address customer needs that otherwise would not be achievable through our proposed operations, maintenance or renewals activities.

Capacity & Growth

Our maintenance and renewals plans as described below focus on sustainability and aim to deliver as much as feasible during CP6 as is feasible, and we have targeted our activities accordingly. We anticipate that the Enhancements that will be funded in CP6 will provide for further growth on the existing network. In this plan, we have forecast the milestones for the Enhancement Delivery Plan for the remainder of CP5 and future milestones for CP6 will be added as schemes are confirmed in due course.

Asset Management & Sustainability

In each year of CP6, we are forecasting a 1.0% reduction in the number of Service Affecting Failures (SAF) and a 1.3% improvement in our Composite Reliability Indicator (CRI). This improvement over the baseline number of failures at the end of CP5 actually represents a more significant challenge when the trend of failures predicted from the planned workbanks in CP6 is understood. Using the models provided by the STE Central teams, the projected failure numbers expected from the interventions in this plan are as follows:-

Assets	Number of SAF (annual)		% change (+% = more failures)
	CP5 Exit	CP6 Exit	
Points failures	784	799	1.91%
Signalling failures	2614	2591	-0.01%
Track faults	960	1000	4.17%

This represents 83% of the failures recorded in SAF and therefore can be seen as representative of the challenge for CP6. Our plans for asset management, RCM installation and utilising the outputs of the national Intelligent Infrastructure programme are, as a consequence, targeting achieving a 2% improvement per year over the underlying trends.

The following pages include our scorecard for 2018/19 and a long term scorecard for CP6 and the first year of CP7.

Scorecard for 2018/19

Safety	WORSE THAN TARGET	TARGET	BETTER THAN TARGET
Lost Time Injury Frequency Rate (LTIFR)	0.558	0.520	0.500
Number of Close Calls raised	13650	18200	22700
Number of Close Calls closed within 90 days	75%	85%	90%
Train accident risk reduction measures	60%	80%	100%
Top 10 Milestones to reduce level crossing risk	6	8	10
Customer	WORSE THAN TARGET	TARGET	BETTER THAN TARGET
Consistent Route Measure - Performance	1.68%	1.59%	1.50%
Freight Delivery Metric (FDM-R)	92.3%	93.9%	94.4%
Caledonian Sleeper Right Time Arrivals	75%	80%	85%
Arriva Rail London T3 Moving Annual Average (Euston-Watford Service Group)	TBC	TBC	TBC
Your Voice Action Plans Completed	80%	90%	100%
Reduction in Railway Work Complaints	1215	1157	1099
National Rail Passenger Survey Results at Network Rail Managed Stations	84	86	88
Chiltern Railways Level 2 Scorecard Achievement	0%	50%	100%
Merseyrail Level 2 Scorecard Achievement	0%	50%	100%
Transpennine Express Level 2 Scorecard Achievement	0%	50%	100%
Virgin Trains Level 2 Scorecard Achievement	0%	50%	100%
West Midlands Trains Level 2 Scorecard Achievement	0%	50%	100%
Northern Level 2 Scorecard Achievement	0%	50%	100%
CrossCountry Right Time Arrivals at Birmingham New Street	TBC	TBC	TBC
Sustainability / Asset Management	WORSE THAN TARGET	TARGET	BETTER THAN TARGET
Reduction In Service Affecting Failures (SAF)	0.5%	1.0%	1.5%
7 Key Volumes	90%	95%	100%
Top Investment Passenger Milestones	60%	80%	100%
Financial Performance	WORSE THAN TARGET	TARGET	BETTER THAN TARGET
Financial Performance Measure (FPM) - Gross Excl. Enhancements (£m)	TBC	0.0	TBC
Financial Performance Measure (FPM) - Gross Enhancements only (£m)	TBC	0.0	TBC
Cash Compliance – Income & Expenditure	TBC	0.0	TBC

This plan is predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change

Long Term Route Scorecard		CP6						CP7	
Safety	Targets	19/20	20/21	21/22	22/23	23/24	24/25	Achievability	
Lost Time Injury Frequency Rate (LTIFR)	Worse than Target	0.480	0.410	0.340	0.270	0.200	0.150		
	Target	0.450	0.380	0.310	0.240	0.170	0.120		
	Better than Target	0.430	0.360	0.290	0.220	0.150	0.100		
Passenger train accident risk reduction measures	Worse than Target	60%	60%	60%	60%	60%	60%		
	Target	80%	80%	80%	80%	80%	80%		
	Better than Target	100%	100%	100%	100%	100%	100%		
Top 10 Milestones to reduce level crossing risk	Worse than Target	6	6	6	6	6	6		
	Target	8	8	8	8	8	8		
	Better than Target	10	10	10	10	10	10		
Number of Close Calls closed within 90 days	Worse than Target	75%	75%	75%	75%	75%	75%		
	Target	85%	85%	85%	85%	85%	85%		
	Better than Target	90%	90%	90%	90%	90%	90%		
Train Performance	Targets	19/20	20/21	21/22	22/23	23/24	24/25	Achievability	
Consistent Route Measure - Performance	Worse than Target	1.72	1.71	1.72	1.72	1.70	TBC		
	Target	1.62	1.61	1.62	1.62	1.59	TBC		
	Better than Target	1.54	1.52	1.53	1.52	1.49	TBC		
Freight Delivery Metric (FDM-R)	Worse than Target	92.3%	92.3%	92.3%	92.3%	92.3%	92.3%		
	Target	93.9%	93.9%	93.9%	93.9%	93.9%	93.9%		
	Better than Target	94.4%	94.4%	94.4%	94.4%	94.4%	94.4%		
Chiltern PPM Moving Annual Average	Worse than Target	92.34%	92.44%	92.49%	92.78%	92.88%	TBC		
	Target	93.80%	93.90%	93.90%	94.20%	94.30%	TBC		
	Better than Target	95.15%	95.25%	95.30%	95.61%	95.71%	TBC		
Chiltern Railways On-Time Moving Annual Average	Worse than Target	68.95%	69.24%	69.34%	70.03%	70.32%	TBC		
	Target	70.00%	70.30%	70.40%	71.10%	71.40%	TBC		
	Better than Target	71.05%	71.35%	71.45%	72.16%	72.47%	TBC		
Chiltern Infrastructure Delay (Track & Non-Track Assets)	Worse than Target	TBC	TBC	TBC	TBC	TBC	TBC		
	Target	TBC	TBC	TBC	TBC	TBC	TBC		
	Better than Target	TBC	TBC	TBC	TBC	TBC	TBC		
Merseyrail PPM Moving Annual Average	Worse than Target	92.98%	92.98%	93.47%	93.96%	94.16%	TBC		
	Target	94.40%	94.40%	94.90%	95.40%	95.60%	TBC		
	Better than Target	95.81%	95.81%	96.32%	96.83%	97.03%	TBC		

Train Performance (cont)	Targets	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Merseyrail On-Time Moving Annual Average	Worse than Target	65.69%	65.69%	66.78%	67.96%	68.45%	TBC	
	Target	66.70%	66.70%	67.80%	69.00%	69.50%	TBC	
	Better than Target	67.70%	67.70%	68.81%	70.03%	70.54%	TBC	
Merseyrail Infrastructure Delay (Track & Non-Track Assets)	Worse than Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Better than Target	TBC	TBC	TBC	TBC	TBC	TBC	
Transpennine Express PPM Moving Annual Average	Worse than Target	87.27%	87.36%	87.45%	87.56%	87.66%	TBC	
	Target	88.60%	88.70%	88.80%	88.90%	89.00%	TBC	
	Better than Target	89.92%	90.03%	90.13%	90.23%	90.33%	TBC	
Transpennine Express On-Time Moving Annual Average	Worse than Target	46.78%	46.88%	46.98%	47.08%	46.29%	TBC	
	Target	47.50%	47.60%	47.70%	47.80%	47.00%	TBC	
	Better than Target	48.21%	48.31%	48.41%	48.51%	47.70%	TBC	
Transpennine Express Infrastructure Delay (Track & Non-Track Assets)	Worse than Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Better than Target	TBC	TBC	TBC	TBC	TBC	TBC	
Virgin Trains PPM Moving Annual Average	Worse than Target	84.61%	85.00%	84.71%	84.11%	84.31%	TBC	
	Target	85.90%	86.30%	86.00%	85.40%	85.60%	TBC	
	Better than Target	87.18%	87.59%	87.29%	86.68%	86.88%	TBC	
Virgin Trains On-Time Moving Annual Average	Worse than Target	47.87%	48.16%	47.96%	47.37%	47.57%	TBC	
	Target	48.60%	48.90%	48.70%	48.10%	48.30%	TBC	
	Better than Target	49.32%	49.63%	49.43%	48.82%	49.02%	TBC	
Virgin Trains Infrastructure Delay (Track & Non-Track Assets)	Worse than Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Better than Target	TBC	TBC	TBC	TBC	TBC	TBC	
West Midlands Trains PPM Moving Annual Average	Worse than Target	87.07%	87.46%	87.07%	87.36%	87.76%	TBC	
	Target	88.40%	88.80%	88.40%	88.70%	89.10%	TBC	
	Better than Target	89.72%	90.13%	89.72%	90.03%	90.43%	TBC	
West Midlands Trains On-Time Moving Annual Average	Worse than Target	60.47%	60.97%	60.47%	60.77%	61.36%	TBC	
	Target	61.40%	61.90%	61.40%	61.70%	62.30%	TBC	
	Better than Target	62.32%	62.82%	62.32%	62.62%	63.23%	TBC	
West Midlands Trains Infrastructure Delay (Track & Non-Track Assets)	Worse than Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Better than Target	TBC	TBC	TBC	TBC	TBC	TBC	
Northern On Time (West & Central) Moving Annual Average	Worse than Target	58.90%	59.20%	59.20%	59.80%	59.90%	TBC	
	Target	60.40%	60.70%	60.70%	61.30%	61.40%	TBC	
	Better than Target	61.90%	62.20%	62.20%	62.80%	62.90%	TBC	

Train Performance (cont)	Targets	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Caledonian Sleeper Right Time Arrivals	Worse than Target	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	
	Target	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	
	Better than Target	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	
Arriva Rail London T3 Moving Annual Average (Euston-Watford Service Group)	Worse than Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Better than Target	TBC	TBC	TBC	TBC	TBC	TBC	
Customer	Targets	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Your Voice Action Plans Completed	Worse than Target	80.0%	80.0%	80.0%	80.0%	80.0%	TBC	
	Target	90.0%	90.0%	90.0%	90.0%	90.0%	TBC	
	Better than Target	100.0%	100.0%	100.0%	100.0%	100.0%	TBC	
Reduction in Railway Work Complaints	Worse than Target	1199	TBC	TBC	TBC	TBC	TBC	
	Target	1142	TBC	TBC	TBC	TBC	TBC	
	Better than Target	1085	TBC	TBC	TBC	TBC	TBC	
National Rail Passenger Survey Results at Network Rail Managed Stations	Worse than Target	82	81	82	82	82	TBC	
	Target	83	83	83	83	83	TBC	
	Better than Target	85	84	85	85	85	TBC	
Chiltern Railways Level 2 Scorecard Achievement	Worse than Target	0%	0%	0%	0%	0%	0%	
	Target	50%	50%	50%	50%	50%	50%	
	Better than Target	100%	100%	100%	100%	100%	100%	
Merseyrail Level 2 Scorecard Achievement	Worse than Target	0%	0%	0%	0%	0%	0%	
	Target	50%	50%	50%	50%	50%	50%	
	Better than Target	100%	100%	100%	100%	100%	100%	
Transpennine Express Level 2 Scorecard Achievement	Worse than Target	0%	0%	0%	0%	0%	0%	
	Target	50%	50%	50%	50%	50%	50%	
	Better than Target	100%	100%	100%	100%	100%	100%	
Virgin Trains Level 2 Scorecard Achievement	Worse than Target	0%	0%	0%	0%	0%	0%	
	Target	50%	50%	50%	50%	50%	50%	
	Better than Target	100%	100%	100%	100%	100%	100%	
West Midlands Trains Level 2 Scorecard Achievement	Worse than Target	0%	0%	0%	0%	0%	0%	
	Target	50%	50%	50%	50%	50%	50%	
	Better than Target	100%	100%	100%	100%	100%	100%	
Northern Level 2 Scorecard Achievement	Worse than Target	0%	0%	0%	0%	0%	0%	
	Target	50%	50%	50%	50%	50%	50%	
	Better than Target	100%	100%	100%	100%	100%	100%	
CrossCountry Right Time Arrivals at Birmingham New Street	Worse than Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Better than Target	TBC	TBC	TBC	TBC	TBC	TBC	

Sustainability / Asset Management	Targets	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Reduction In Service Affecting Failures (SAF)	Worse than Target	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	
	Target	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	
	Better than Target	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	
CRI	Worse than Target	0.3%	1.6%	2.9%	4.2%	5.5%	0.3%	
	Target	1.3%	2.6%	3.9%	5.2%	6.5%	1.3%	
	Better than Target	2.3%	3.6%	4.9%	6.2%	7.5%	2.3%	
7 Key Volumes	Worse than Target	90%	90%	90%	90%	90%	90%	
	Target	95%	95%	95%	95%	95%	95%	
	Better than Target	100%	100%	100%	100%	100%	100%	
Top Investment Milestones	Worse than Target	60%	60%	60%	60%	60%	60%	
	Target	80%	80%	80%	80%	80%	80%	
	Better than Target	100%	100%	100%	100%	100%	100%	
CSI	Worse than Target	TBC	TBC	TBC	TBC	TBC	TBC	
	Target	TBC	TBC	TBC	TBC	-4%	TBC	
	Better than Target	TBC	TBC	TBC	TBC	TBC	TBC	
Financial Performance	Targets	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Financial Performance Measure (FPM) - Gross Excl. Enhancements (£m)	Worse than Target							
	Target	0.0	0.0	0.0	0.0	0.0	0.0	
	Better than Target							
Financial Performance Measure (FPM) - Gross Enhancements only (£m)	Worse than Target							
	Target	0.0	0.0	0.0	0.0	0.0	0.0	
	Better than Target							
Cash Compliance – Income & Expenditure	Worse than Target							
	Target	0.0	0.0	0.0	0.0	0.0	0.0	
	Better than Target							

This plan is predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change

Achievability definitions (applies to "target" value)	
RED	Very challenging, likely to require substantial organisational and cultural change to achieve and/or highly dependent on third party involvement
AMBER	Challenging, likely to require moderate organisational and cultural change to achieve and/or dependent on third party involvement
GREEN	Achievable, builds on existing organisational and cultural capabilities and little or no dependency on third parties for delivery

Regulatory floors

In order to give greater clarity on the minimum levels of performance and sustainability expected by the Regulator (ORR), our plan includes regulatory floors for the key metrics in these areas. These floors, set out in the following table, will act as a level below which ORR would consider undertaking formal investigation for licence breach. Further information on the methodology used to calculate these regulatory floors is included in Appendix I.

Regulatory floors	19/20	20/21	21/22	22/23	23/24
Consistent Route Measure - Performance	2.11	2.10	2.11	2.11	2.08
Freight Delivery Metric (FDM-R)	92.0%	92.0%	92.0%	92.0%	92.0%
Network Sustainability	90%	90%	90%	90%	90%

NB Network Sustainability floor included on the basis of continuing discussions regarding definition and monitoring method of measurement

4. Activity constraints, risks and opportunities

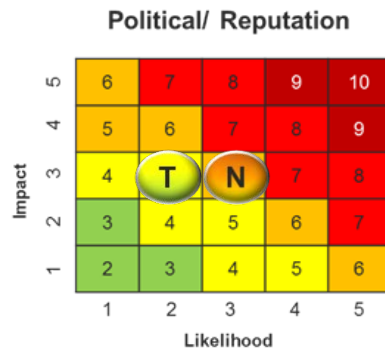
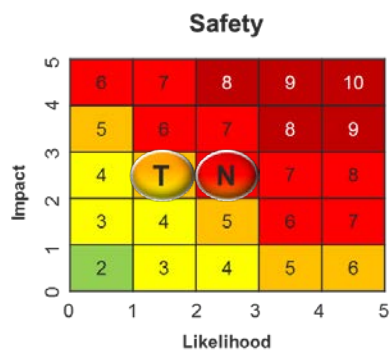
4.1 Safety

KEY

N = NOW – Current position

T = TARGET – position at end of CP6

Summary of objectives		Delivery of LNW Route's Safety, Health and Environment (SHE) strategy to reduce workforce, passenger and public harm and environmental risks. Line of sight through to the National Home Safe Plan and RSSB Industry leading safety strategy. Working collaboratively with our trade union H&S representatives to jointly deliver plans and external stakeholders to embed an industry approach to improving system safety and reduce the risk of a train accident. Robust risk management and assurance frameworks in place to consistently manage existing and emerging risks, and to maintain quality		
No.	Key constraints, risks and opportunities	What we plan to do	Owner	Timescale (start/finish)
1	Opportunity; Reduce the number of accidents resulting in significant harm i.e. specified injuries, lost time accidents and near miss events	Implement the Route SHE strategy, structured around 6 core areas – Safety leadership, track worker safety including and abolish Victorian lookout warning with flags as the sole means of protection., system safety, risk management & assurance including slip, trip and falls and manual handling, health & wellbeing including mental health, fatigue management and Environment	HoRSHE COO	Now/March 2025
2	Opportunity; Develop a mature safety culture within the Route where SHE is in the hearts and minds of all of our workforce	Undertake culture climate checks to target areas for improvement, Embed existing initiatives that support a mature, caring safety culture with strong safety leadership for example safety conversations, safety hour, risk awareness, reporting underpinned by a fair culture.	HoRSHE	Now/March 2025
3	Opportunity; Collate Platform Train Interface (PTI) risk data	Utilise the new RSSB risk assessment tool to assess Platform Train Interface risk at stations on the Route. Engage with operators to identify best practice and joint plans for reduction of risk	DRS&AM	Now/December 2019
4	Risk: CP6 enhancement schemes to address congestion at stations do not proceed as planned	As funding for the CP6 enhancement schemes is confirmed or not we will develop mitigation plans to manage increasing congestion at stations in CP6	COO	March 2019/End of CP6
5	Risk: Earthworks failures impact train operations and passenger safety	Increase earthworks and drainage asset maintenance and utilise more monitoring to better manage our asset base and reduce the potential number of service affecting failures	DRS&AM	Dec 2019/End of CP6
6	Risk: Not achieving the CP5 regulated target to reduce Level Crossing risk and insufficient funding to deliver the national level crossing strategy in CP6	Have an asset management plan in place, continue to risk assess & inspect, maintain existing level crossings, and build business cases for appropriate mitigations. Additional investment options to fund further level crossing risk reductions included in Appendix D	DRS&AM	Now/March 2020
7	Risk: Route crime including fatalities and trespass continue to rise and has a larger societal impact	Continue to develop innovative solutions to reduce the risk, working closely with industry partners, engaging with local communities and developing appropriate approaches	HoRSHE COO	Now/March 2025
8	Opportunity: Introduce an Environment Management System (EMS) in line with ISO14001 and develop an integrated management system	Delivered by using a high level structure for Management Systems and use of the LNW MSP4NR governance framework. In addition, better understand our waste processes and energy usage to deliver improvements across the Route	DRS&AM	Now/March 2025



Summary of risk outcome

Safety
Accidents and operational irregularities pose a risk to our workforce whilst passenger and public harm is incurred whilst interfacing with the railway.

Reputation
Reduced funding, higher than estimated costs and inefficient and non-innovative plans create a degradation in safety, health and the environment

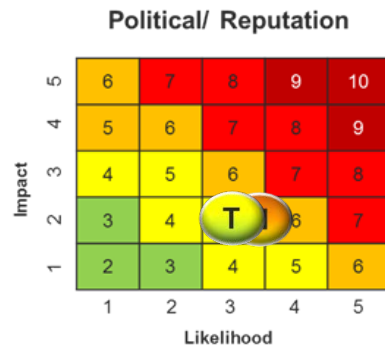
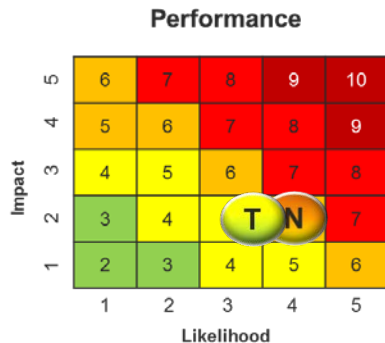
4.2 Train performance

KEY

N = NOW – Current position

T = TARGET – position at end of CP6

Summary of objectives		CP6 will bring a number of performance opportunities and challenges to the Route. Our objective will be better identification of long term risk and to devise strategies and projects to mitigate them to sustain the current good levels of infrastructure reliability throughout CP6. The greatest risk to performance in CP6 is if funding is further constrained, risks materialise to a greater extent than envisaged, and our performance community are unable to react to emerging trends and risks. See also Appendix C			
No.	Key constraints, risks and opportunities	What we plan to do	Owner	Customers impacted	Timescale (start/finish)
1	Risk: HS2 development work and mass haul traffic on and alongside LNW Route	Integrated planning with HS2 team & detailed performance mitigation planning	DRS&AM, COO	All	Now/End of CP6
2	Risk: Introduction of new train fleets	Work closely with operators on interface and entry into service issues	COO	WM, TPE, MR	Now/End of CP6
3	Constraint: Declining asset performance as asset age increase	Undertake additional targeted interventions to focus on poor performing assets and locations	COO	All	Start of CP6/End
4	Opportunity: Long term performance schemes and strategies	Joint performance strategies established with all lead TOCs and long term schemes developed with R&D and Digital Railway	DRS&AM, COO	All	Now/End of CP6
5	Opportunity: Address time to effect service recovery following severe incidents	DPI work streams developed at the end of CP5 and implemented in CP6. A targeted approach for time to site and time to fix	COO	All	Now/End of 2019
6	Opportunity: Robust timetable and access planning	Integrated timetable and access planning with Capacity Planning and TOCs/FOCs into the Route	COO	All	Now/End of 2020
7	Opportunity: Refranchising throughout CP5 and CP6	Engage with DfT and bidders at an early stage and understand what the long term joint strategy should look like	COO	All	Now/CP7
8	Opportunity: Severe weather, Crime and trespass (External Influence)	Integrated planning from Route services and Heads of Maintenance and Ops for the Route and use of new technologies	DRS&AM, COO	All	Now/By end of 2019
9	Opportunity: Oxford Phase 1 & proving of timetable change	Full engagement with Chiltern and Capacity Planning along with Western Route to protect performance	COO	All	Now/November 2020



Summary of risk outcome

We are aiming to manage risks to performance in CP6 to sustain the good levels we currently have in CP5 and so reduce the likelihood of reputational impacts. Key risks are HS2, new rolling stock fleets and increased traffic growth, and we will develop joint long term performance strategies with our lead operators and a joint FOC strategy with FNPO to address these

4.3 Locally driven customer measures

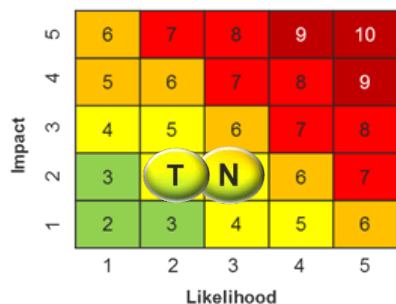
KEY

N = NOW – Current position

T = TARGET – position at end of CP6

Summary of objectives		Our objective will be to develop proposals jointly with our operators to ensure that changes in CP6 that will affect our key operators are managed and any risks arising are mitigated			
No.	Key constraints, risks and opportunities	What we plan to do	Owner	Customers impacted	Timescale (start/finish)
1	Opportunity: Refranchises in CP5 and CP6	Engage with DfT and bidders at an early stage and understand what the long term joint strategy should look like for CP6. Three of our six key operators will be refranchised over the next 7 years	COO	All	Now/End of CP6
2	Opportunity: New train fleets in CP6 will provide greater capacity and better performance	Joint working practices to understand what impact the fleets will have on infrastructure and possible trials for on train monitoring and Digital Railway use. New fleets already confirmed for Merseyrail, Northern and Transpennine Express	COO	All	Now/End of CP6
3	Opportunity: Closer working with Operators	Further develop metrics on new Level 2 scorecards with stakeholders to better reflect their priorities and our performance	COO	Key TOCs	Now/End of CP5
4	Opportunity: Change in Performance metrics	NWR, TOC and FOCs to shadow new metrics by the end of CP5 to fully understand benefits	COO	All LNW TOCs	Now/Start of CP6
5	Constraint: Insufficient Enhancement funding to address customer requirements	Current CP6 proposals do not contain any discretionary funding allowance to be able to address customer requirements that require asset interventions. Proposal included in Appendix D	DRS&AM	All	n/a
6	Risk: Marylebone asset age and renewals	Formalise a 'golden 5 mile' plan by the end of CP5 for delivery within CP6 to protect and renew ageing assets near Marylebone	DRS&AM, COO	CR, WM, XC	Now/Start of CP6

Political/ Reputation



Summary of risk outcome

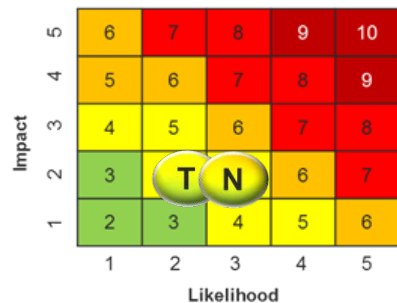
We already have strong relationships with our operators and will continue this in CP6. Challenges include 3 out of our 6 key TOCs experiencing a refranchise, new train fleets arriving, and growth continuing. We will work with current and future operators to tackle these challenges together and that stakeholder issues we are currently identifying are progressed wherever feasible

KEY
 = NOW – Current position
 = TARGET – position at end of CP6

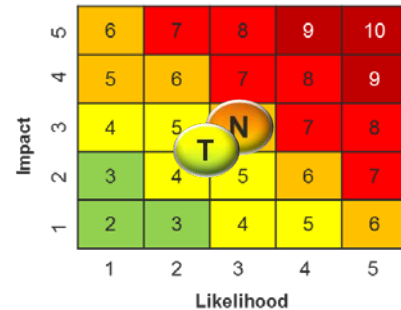
4.4 Sustainability & asset management capability

Summary of objectives		We will adopt and embed a structured continuous improvement approach to developing and delivering our Renewals and Maintenance Asset Management Plans to provide a safe and reliable railway. This will be managed through the DRS&AM organisation via regular reviews and progress monitoring		
No.	Key constraints, risks and opportunities	What we plan to do	Owner	Timescale (start/finish)
1	Opportunity: Implementation of Risk Based Maintenance regimes	RBM will help us to make a step change in the way we manage asset reliability and asset whole life cost and allow us to safely maximise asset usage for minimum intervention. This means moving from time based fix and find regimes to intelligent proactive functional based regimes	DRS&AM, COO	Now/March 2019
2	Risk: Delivering the remaining CP5 renewal volumes	We will continue to review renewals volumes every period and aim to maximise what can be delivered for the funding available	DRS&AM	Now/March 2019
3	Opportunity: Understanding the gap to ISO 55000 compliance and plan to close	We will use the National AMEM assessment report to assist in identifying the areas of focus required to achieve ISO55000 compliance. We will then produce and complete an action plan to enable achievement of full certification to ISO55000 during CP6	DRS&AM	Now/End of 2019
4	Opportunity: Move to predict and prevent maintenance strategy	The corporate maintenance strategy will help to achieve wider asset management objectives and describes how we consistently transition to maintaining all asset types to predict and prevent failure, underpinning safe and reliable delivery of a right-time railway	DRS&AM, COO	Now/March 2019
5	Opportunity: Integrated delivery, risk, change control and reporting under an improved operating model and continuous business planning	LNW Route has a complex portfolio of works including major third party enhancements such as HS2 and Northern Powerhouse Rail. If not managed effectively the scale of work has the potential to cause disruption to Route operations. We are upgrading our management approaches to the collation, integration, control and communication of information from across enhancement, renewal and third party activity in order to provide support to their overall delivery	DRS&AM	Now/March 2018
6	Opportunity: Intelligent Infrastructure Programme	LNW Route will help shape the Intelligent Infrastructure programme and will use the tools and capabilities provided to change the way we work to meet the objectives and realise benefits in CAPEX and OPEX spend, performance, reductions in Service Affecting Failures, and safety	DRS&AM	Now/March 2023

Political/ Reputation



Value



Summary of risk outcome

Failure to achieve a predict and prevent maintenance strategy with integrated cross functional multi-disciplinary delivery plans. Unable to maximise the whole life cost of assets through implementation of an effective and mature asset management approach

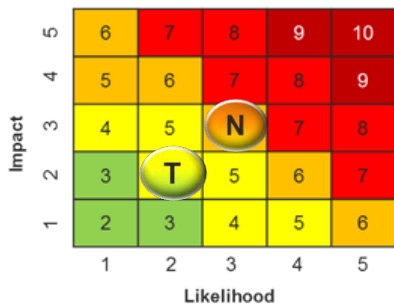
4.5 Financial performance

KEY
 = NOW – Current position
 = TARGET – position at end of CP6

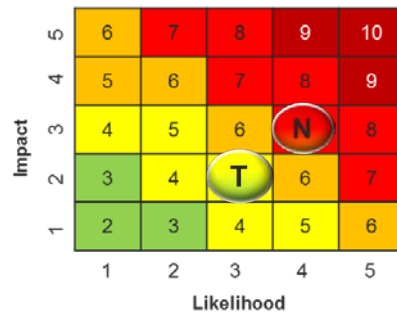
Summary of objectives We will continue to bring a greater focus on financial performance and will develop a cost conscious culture amongst our teams to promote best value for money in everything we do. This will include holding ‘cost hours’ every period in a similar way to safety hours to drive awareness and realise savings wherever feasible

No	Key constraints, risks and opportunities	What we plan to do	Owner	Customers impacted	Timescale (start/ finish)
1	Opportunity ; Develop a cost conscious culture within the Route to challenge expenditure and identify waste	Regular initiatives such as having price tags on items in stores and establishment of a ‘cost hour’ every period to highlight issues and solutions	All	All	Now/End of CP6
2	Opportunity ; Management of risk fund within LNW Route	Target available funds to realise investment options in Appendix D	RMD/RFD	All	All CP6
3	Constraint : CP5 deferrals could impact CP6 workbank planning and stability	Regularly review future workbanks and asset condition to ensure work is planned and delivered appropriately to maintain supply chain stability	RAM team	Deliverers & suppliers	Now/End of CP6
4	Constraint : Insufficient funds to achieve asset policy compliance leading to having to adopt lowest initial cost approaches rather than lowest whole life cost	We will adopt a risk based approach for assessing renewals workbanks and maintenance needs	RAM team	Deliverers & operators	Now/End of CP6
5	Risk : We do not achieve our forecast performance throughout CP6 and our based upon our asset plan, current performance and the linkage between renewal, refurbishment and maintenance	Regular reviews of our CP6 delivery plan to ensure cash compliance is achieved throughout CP6 whilst balancing outputs such as performance and sustainability	RAM and Finance teams	Deliverers & operators	Now/End of CP6
6	Risk : Fluctuations in large contract rates over and above identified headwinds in our plans that affect our cost base	We will work collaboratively with our deliverers to ensure that our volumes are understood and our requirements are accurately forecast to enable the best contracts going forward. We will also focus upon waste in contracts to drive efficiency and improve post-contract management	Finance team	Suppliers	Now/End of CP6
7	Risk : During CP5 we have been significantly affected by adverse weather necessitating emergency schemes at Eden Brow, Harbury etc. This has affected funds / resource / FPM	We have included a small provision in our plan to mitigate against the FPM impact caused by adverse weather but not extreme events. We are looking at better ways of managing storms with speed restrictions and service recovery to minimise the impact	RAM and Finance teams	All	Now/End of CP6
8	Risk : Failure to reduce the frequency or impact of suicides occurring south of Rugby, which has a disproportionate negative impact on Schedule 8 costs	Multiple interventions to prevent suicide and improve service recovery times. See Section 4.1, item 7, above	HoRSHE, COO	VWC, WM, FOCs	Now/End of CP6

Political/ Reputation



Value



Summary of risk outcome

Our key risks in CP6 are the adequacy of funding to safely sustain our assets at the required performance levels and our ability to best prioritise the funding that we do have whilst driving value for money. Our ability to balance short term financial changes whilst managing a long-term outlook remains a challenge

4.6 HS2

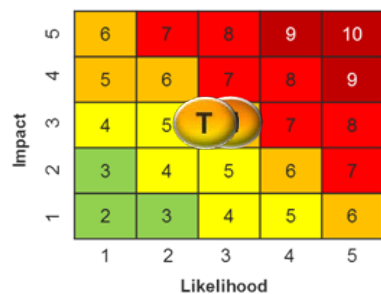
KEY

N = NOW – Current position

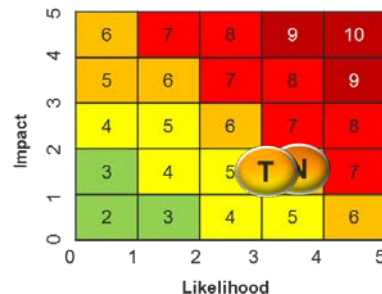
T = TARGET – position at end of CP6

Summary of objectives		HS2 will be under construction on and alongside LNW Route in CP6. We aim to mitigate all the potential impacts on all such as availability of operational and supply chain resources, access requirements and additional traffic for moving spoil etc so that we can continue to deliver a high performing railway for our customers			
No	Key constraints, risks and opportunities	What we plan to do	Owner	Customers impacted	Timescale (start/ finish)
1	Opportunity: Sharing of access costs with HS2 for our works	LNW Integrated Planning Team (HALO) to continue to develop possession activity so that works can be integrated	HS2SD	VT, WM, ARL, FL, CS	Now/End of CP6
2	Opportunity: Inclusion of Crewe Hub renewals	Integrate renewals at Crewe into our CP6 plan	DRS&AM	VT, FL, WM	Now/2019
3	Constraint: Inability to accommodate increasing growth in CP6 due to restricted Euston layout etc and relative immaturity of the design to support the introduction of a classic compatible fleet	Work with HS2 Limited to derive sensible specifications and outputs for the classic compatible fleet, and identify and secure the remit and funding to support the required activity	HS2SD, COO	VT, WM, ARL, CS	Now/End of 2019
4	Constraint: Relocation of Willesden HOOB, Euston DU and Saltley DU will disrupt maintenance and renewals in CP6	Identify and protect maintenance compliance during the relocation of key operational teams	HS2SD, COO, DRS&AM	VT, WM, ARL, CS, CR, XC	Now/End of 2019
5	Risk: HS2 works along the LNW Route will cause disruption, use access opportunities and require industry resource to supervise	Integrated planning with HS2 team & detailed performance mitigation planning	HS2SD	VT, WM, ARL, FL, CS	Now/End of CP6
6	Risk: Funding potentially unavailable for all identified LNW Route mitigation works	Prioritise activities on the basis of protecting LNW Route operations through design or asset protection activity	HS2SD, COO	VT, WM, ARL, FL, CS	Now/End of 2019
7	Risk: HS2 construction at Euston constrains passenger capacity/pedestrian flow on station, leading to passenger dissatisfaction and cost and performance impacts of safely managing passenger growth	Recommend that funding is provided in CP6 to develop and deliver interim passenger capacity enhancements at Euston as the first stage of Euston 'B2' project	HS2SD, DRS	VT, WM, ARL, CS	Now/End of 2019
8	Risk: HS2 mass haul traffic impact on asset condition and haulage availability	Manage applications for paths using existing protocols. Forward planning of haulage requirements for LNW works	HS2SD	All	Now/End of CP6
9	Risk: Reduction in supply chain capacity available to LNW Route due to HS2 workload in CP6	Confirm resource availability with framework and other suppliers and give early visibility of CP6 workbanks	RDD, DRS&AM	All	Now/End of CP5

Political/ Reputation



Performance



Summary of risk outcome

We have based our plans on the Euston mitigation measures being adopted which allow us to accommodate current service levels on West Coast. By good management we also expect to mitigate other impacts of HS2 and sustain current performance levels throughout CP6. There remains a risk that our management approaches prove insufficient or significant changes occur which render them ineffective

5. Activities & expenditure

5.1 Cost and volume summary

Overall summary

		CP5		CP6	
		Forecast expenditure	TOTAL	Forecast expenditure	TOTAL
OPEX	DU maintenance	1,261	2,275	1,452	2,760
	Non-DU maintenance	100		190	
	Operations & support	851		897	
	Reactive maintenance	63		220	
CAPEX	Asset renewals	2,400	2,405	2,256	2,526
	Crewe HS2 integration works	5		270	
	Digital Railway	0		0	
	HS2 On Network Works	<i>Excluded (3rd party funded)</i>		<i>Excluded (3rd party funded)</i>	
	Enhancements	<i>Excluded</i>		<i>Excluded</i>	
TOTALS (£m)			4,680		5,286

This plan is predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change

Notes

1. We have adjusted our detailed plans to align with nationally set targets and as a result they contain less renewals work than we would consider necessary to deliver sufficient sustainability in CP6. Our options for additional expenditure in Appendix D contain details of those further renewals we would recommend being included to reduce the threat to sustainability over the Control Period.
2. Our proposed renewals expenditure includes £270m for Crewe HS2 integration works. For the purposes of this plan, it has been assumed that this is expended on signalling works and the volumes and phasing in the tables below reflect this activity.
3. Our proposed OPEX expenditure includes the impact of additional assets introduced in CP5 by enhancement schemes such as the NW Electrification Programme, the Ordsall Chord etc, and the cost of the HS2 sponsor team.
4. We have not included any costs or made allowance for the works required to deliver the HS2 On Network Works and we are assuming that they will be funded directly by either the DfT or HS2 Limited. Presently both our OPEX and CAPEX proposals only take account of them as headwinds and risks as they are still under development.

RENEWALS COSTS (post headwinds and efficiencies in 17/18 prices)

	Unit of Measure	Funded by	CP5 (£m)						CP6 (£m)					
			14/15	15/16	16/17	17/18	18/19	CP5	19/20	20/21	21/22	22/23	23/24	CP6
Track	£m	Renewals	213.9	200.3	151.4	80.8	77.9	724.3	125.6	134.6	145.8	149.0	128.0	683.0
Signalling	£m	Renewals	147.2	166.8	115.3	116.5	90.0	635.8	71.0	129.3	235.8	78.2	66.3	580.6
Structures	£m	Renewals	70.7	99.8	100.2	75.9	84.5	431.1	75.2	73.4	81.4	90.8	87.5	408.4
Earthworks	£m	Renewals	42.0	55.0	49.7	19.2	15.9	181.8	35.5	38.8	28.4	31.0	16.3	150.1
Drainage	£m	Renewals	11.1	36.5	22.4	7.2	3.8	81.0	19.7	22.0	20.6	19.6	16.3	98.1
Buildings	£m	Renewals	40.4	55.0	61.8	38.4	33.1	228.8	42.0	24.9	61.4	39.8	28.4	196.5
Electrification & Fixed Plant	£m	Renewals	19.0	20.5	30.7	24.2	17.1	111.6	22.7	31.6	36.1	24.8	23.8	138.9
Crewe HS2 Integration Works	£m	Renewals	0.0	0.0	0.0	1.2	4.2	5.4	26.8	29.0	45.0	60.8	108.4	270.0
Total Renewals	£m	Renewals	544.3	633.9	531.5	363.4	326.6	2,399.7	418.5	483.7	654.4	494.0	475.0	2,525.5
Digital Railway	£m	DR Programme	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Renewals + Digital Railway	£m	All	544.3	633.9	531.5	363.4	326.6	2,399.7	418.5	483.7	654.4	494.0	475.0	2,525.5

KEY VOLUMES

	Unit of Measure	Funded by	CP5						CP6					
			14/15	15/16	16/17	17/18	18/19	Total	19/20	20/21	21/22	22/23	23/24	Total
Plain Line	Linear track m	Renewals	236,051	231,499	155,628	57,586	16,179	696,943	204,934	221,552	222,236	254,554	226,044	1,129,320
S&C	No. of S&C units	Renewals	56	111	133	80	87	467	141	119	180	86	86	613
Signalling	SEU	Renewals	169	504	367	167	412	1,619	5	117	599	138	127	985
Crewe HS2 Integration Works	SEU	Renewals	0	0	0	0	0	0	0	0	0	116	394	510
Embank/Soil Cut/Rock Cut	No. of	Renewals	600	503	396	539	372	2,410	635	890	837	606	585	3,553
Underbridges	m2 plan deck area worked on	Renewals	15,964	20,642	23,858	19,108	19,291	98,863.5	9,274	9,948	9,948	9,948	9,948	49,066
Wire runs	No. of	Renewals	0	0	0	0	0	0	3	5	4	2	0	14
Conductor Rail renewal	Km	Renewals	0	0	0	0	0	0	0.6	5.6	3.9	0.71	0.4	11.21

OPEX COSTS (post headwinds and efficiencies in 17/18 prices)

	CP5 (£m)						CP6 (£m)					CP7 (£m)	
	14/15	15/16	16/17	17/18	18/19	CP5	19/20	20/21	21/22	22/23	23/24	CP6	24/25
Track							141	142	142	142	141	708	
Off track							21	23	24	26	27	122	
S&T							52	52	52	52	52	262	
E&P							36	37	36	37	36	182	
DU HQ							36	36	36	36	36	178	
DU/WD Maintenance													
Non DU Maintenance													
Civils: Buildings Maintenance													
Civils: Structures Maintenance													
Civils: Earthworks Maintenance													
Total Maintenance Costs													
Operations													
Support													
Operations & Support Costs													
Total Controllable Costs													
Non-Controllable Costs													
Headcount													
Permanent													
Agency													

ENHANCEMENTS COSTS (in 17/18 prices)

Programme Name	Project Name	Scheme category	CP5 £m						CP6 £m						CP7 £m
			14/15	15/16	16/17	17/18	18/19	Total	19/20	20/21	21/22	22/23	23/24	Total	24/25
HS2 Phase 1 On Network Works	<ul style="list-style-type: none"> Euston Enabling works – Station, Railway Systems, 11kv diversion & essential works Central East West Rail Water Orton Corridor Handsacre Junction Ground investigation HALO activity Double tracking Leamington - Coventry WOC Electrification WOC addtl capacity - SAS Bridge HS2 mass haulage strategy WOC Cemex Stockpiling WOC Saltley DU 	2	<div style="border: 1px solid black; padding: 5px;"> <p>NB All HS2 related works are subject to confirmation of budget and spend profiles and integration into the Route plans once the scope of works has been determined</p> </div>						tba	tba	tba	tba	tba	tba	
HS2 Phase 1 Rolling stock associated works	<ul style="list-style-type: none"> Rolling stock intro - gauging (TIIS) Alterations to NR Infrastructure when gauge/route info is available 	2							tba	tba	tba	tba	tba	tba	
HS2 Phase 1 Timetable works	<ul style="list-style-type: none"> Stafford South Jn Wigan -Euxton Preston Passenger capacity HS2 Station branding improvements HS2 Depot enhancements HS2 required WCML linespeed improvements 	2	tba	tba	tba	tba	tba	tba							
HS2 Phase 2A On Network Works	<ul style="list-style-type: none"> Interventions as per hybrid bill Crewe re-signalling Crewe OHLE/track Madeley - Crewe ONW AsPro Staveley - New Crofton Stone Sandbach - Manchester Picc South of Crewe Works 	2	tba	tba	tba	tba	tba	tba							
HS2 Phase 2B On Network Works	<ul style="list-style-type: none"> Rolling Stock depot 	2	tba	tba	tba	tba	tba	tba							
HS2 Phase 2 Timetable works	<ul style="list-style-type: none"> Sandbach to Manchester interventions Crewe to Manchester interventions Crewe to Weaver 	2	tba	tba	tba	tba	tba	tba							

NB No other enhancements schemes are currently identified for delivery on LNW Route during CP6

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 will also include an additional £130m of route 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 route 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.

5.2 Asset intervention strategy

5.2.1 Asset Management Capability

We will adopt and embed a structured continuous improvement approach to developing and delivering our Enhancement, Renewals and Maintenance Asset Management Plans to provide a safe and reliable railway.

We have already started our journey towards ISO55001 (*Asset management - Management systems – Requirements*) compliance through implementation of an alignment plan that takes us to the end of Control Period 5. Through Control Period 6 we will work towards Level 4 optimising maturity on the ISO55001 scale by the end of the control period. The key areas for achieving this improvement can be summarised as follows:-

Continuous Business Planning - This focuses on understanding the core process for decision making, planning and delivering asset management activities on our infrastructure, developing our capability to a point where we have a single recognised version of the plan in which all asset managers and deliverers have been involved and contributed. The asset management plans have clear ownership, are live, integrated and continuously updated.

Asset Management Capability - We will develop the required culture, competencies, leadership and organisation through provision of competency tools and training. This will allow a clear map of the skills and capabilities we need in each role, addressing key gaps and enabling succession plans to be put in place.

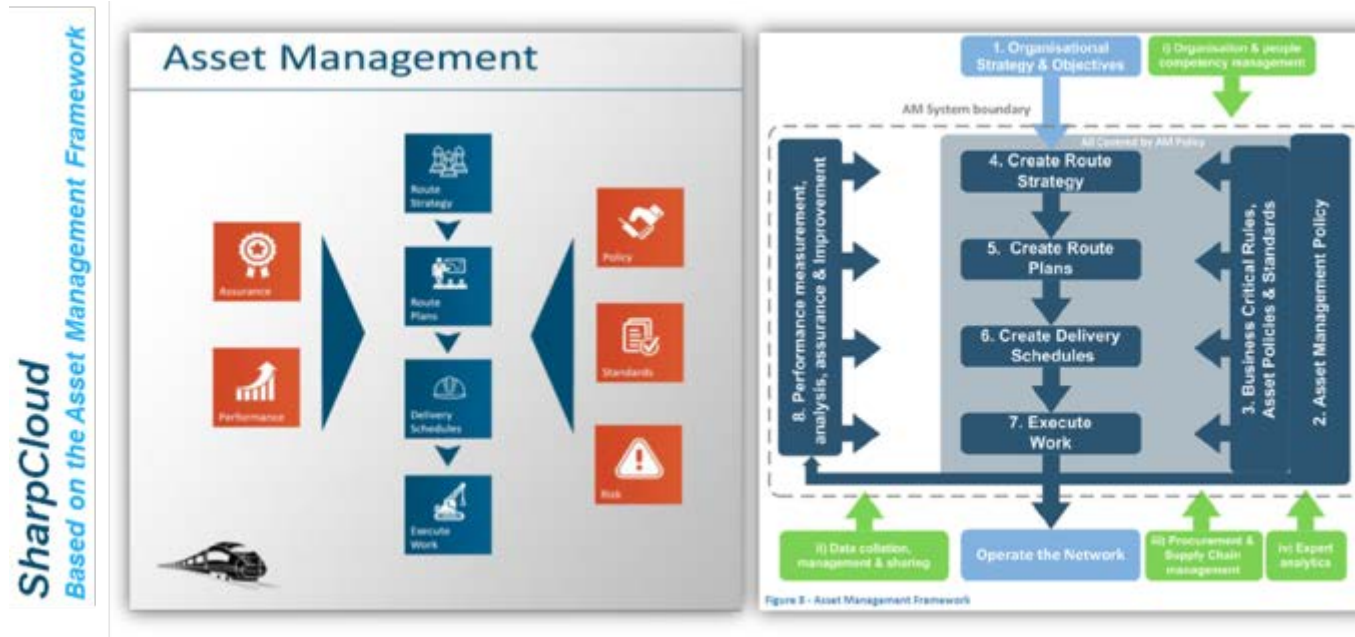
Asset Information - Our Asset Data Governance improvement plan will deliver a foundation of trusted asset knowledge which will underpin effective decision making. We will develop and improve the capability to analyse asset data and predict when and where intervention is necessary.

Continuous Assurance and Improvement Culture - We will constantly and consistently analyse risks and assure the asset management system such that we develop a common understanding of the overall asset system and interfaces, identify where issues exist, exploit potential opportunities and drive continuous improvement. We will monitor and develop our compliance to legislation such as CDM.



To deliver the Asset Management capability improvement we will initially focus on embedding an effective Asset Management System within our business. A key part of achieving this is aligning our route planning and delivery with the Asset Management Framework and publishing our Route Asset Management Plans in a clear, accessible and structured system. This system will provide the line of sight needed to connect all activity with the principal objectives we aim to achieve.


We have already started this journey by laying down the foundation in a cloud based system called 'SharpCloud' which we will continuously develop and improve over the remainder of CP5. An overview of our system shown alongside the Network Rail Asset Management Framework is shown below:-



Allied with the implementation of an effective Asset Management System we are reviewing new organisational structures that aim to strengthen our Asset Management capability by putting the Route Asset Manager as a clear client to our delivery agents and making responsibilities clearer. This new structure will also embed continual business planning and delivery integration at its core.

Our Route System Review Panel (SRP) is already established as best practice in Network Rail and we have built the foundations of an effective panel and supporting activity to oversee the safe and technical integration of system change. We will continue to develop this capability adding to our remit and delivering a value added service to support the effective delivery of our business plan. SRP is vital to the safe integration of the major programmes such as HS2. We will also embed our approach to the management of CDM through SRP.

5.2.2 Summary route asset strategies

Asset area	Intervention strategy
<p>Track - 1 of 3</p> 	<p>Current asset performance</p> <p>Sustainability</p> <ul style="list-style-type: none"> The Plain Line Pattern Recognition (PLPR) system has successfully been introduced across LNW in CP5. Further work will take place to review the frequency of inspection, and use Risk Based Maintenance (RBM) analysis to create opportunities to optimise the inspection frequency, with the aim to maximise coverage on new routes in CP6 The overall strategy is to adopt intervention options that maximise the life of the key components of the track asset, the sleeper or bearer. This will include implementing innovative processes such as rail milling in order to meet the capability and sustainability requirements with existing assets <p>Performance</p> <ul style="list-style-type: none"> LNW track performance on high criticality lines remains good but the proposed expenditure in CP6 is below our preferred level. Accordingly, maintenance activity has been increased to maintain performance and minimise deterioration. We will also use train borne inspection data to identify defects and make early maintenance interventions using risk based maintenance regimes We are continually working towards a TSR-free approach within West Coast Mainline areas and our vision of track strategy looks at areas such as broken rails, cracked and broken crossings and cyclic top issues as key areas of business improvement <p>Safety</p> <ul style="list-style-type: none"> During CP5, LNW has focused its efforts on the following to improve the overall safe performance of the track asset and safety for passengers and workforce <ol style="list-style-type: none"> Broken rails – Introduced a 20ml dip angle intervention on 90mph and above lines. Implemented a strategic rerailing plan aimed at wear and service life and introduced capitally lead repadding of 5mm pad sleepers. Plans also focus on the continued reduction in pre 1976 rail, on the highest track category lines, and strategically when linespeed increases are introduced Repeat Twist Faults – Set a target to reduce repeat twists faults, 50% reductions by the end of CP5. This has been supported by the role out of PLPR and creation of actions to address the root cause of repeat twist faults PLPR – Continued roll out of PLPR where ever possible. This has provided regular 4 weekly geometry information on the majority of LNW and candidate defects continue to fall. PLPR provides repeatable data and has drastically reduced the hours of track patrolling being undertaken red zone Eddy Current – Eddy Current roll out in late CP5. This will replace visual inspection of RCF where UTU recording takes place. This improves the safety of our staff by reducing the number of hours carrying out visual inspection and will complement the current UTU testing plan, to provide greater visibility of defects in RCF S&C Stretcher bars – During CP5, a risk based program of works has delivered the fitment of tubular stretcher bars as part of SIN126. This has improved the management of gauge throughout the moving part of the switches <p>Asset performance at the end of CP6</p> <p>Performance</p> <ul style="list-style-type: none"> The CP6 Strategy enables better decision making through the use of regular, repeatable asset data and implementation of RBM. This will enable maintenance engineers to set interventions limits suitable to deliver the required performance outputs. The renewals strategy aims to provide an asset suitable for RBM, by maximising the life of the sleeper and providing funding for increased drainage intervention

Track - 2 of 3



Sustainability

- During CP6, the used service life of the track asset will increase, due to the reduction in full renewals. To offset the impact of this, refurbishment work and re-ballasting will be deployed to maximise the life of the sleepers and S&C bearers

Safety

- Continued focus on optimising train borne inspections to reduce human intervention will enable improvements in safety for rail users and track maintenance engineer's teams. RBM will provide 'right side' interventions, which will also reduce the need for track inspection, and target defects before reaching the standard intervention limits

Summary of interventions

Route policy

- Our overall strategy is to maximise sleeper life and introduce under sleeper pads in all renewals to maximise future ballast life. To support this strategy, there will be an increase in refurbishment activity, primarily with S&C, replacement of 5mm pads in plain line and in-situ refurbishment of obsolete fastenings
- Eddy Current will provide detailed asset data to enable a strategic plan to manage RCF on LNW. Rail Milling will be introduced as a refurbishment treatment to reduce the volume of re-railing required in CP6. Introduction of rail milling will complement the grinding train plan, which will continue to manage the rail following rail changing or milling

Asset life/sustainability

- Plain line track renewals will focus on two main areas; maintaining performance on WCML and Chilterns, and delivering additional drainage to deal with underlying track quality issues. Weld repairs to crossings will be proactively planned, utilising fully automatic arc welding techniques (BV1000), which will be part of the whole life approach

Plain Line

- A summary of our proposed maintenance led interventions in CP6 is:-
 - Track Patrolling (BVI) – Reductions following full roll out of PLPR and RBM
 - Supervisors inspections – Reduction, not required where RBM regimes implemented
 - Supervisors Cab Rides – Reduction – not required where RBM regimes implemented
 - Visual inspection of Pre 76 rail – Reduction – Utilise UTU U15 and U8 testing to size instead of visual inspection.
 - Visual inspection of RCF – Reduction – Eddy current replaces visual inspection of plain line on UTU compliant routes
 - S&C Stoneblowing – Increased – roll out of new multipurpose fleet enables greater volumes to be delivered in CP6
 - Changing Sleepers – Reduction – Large scale sleeper changing delivered as part of Refurb
 - Manual Wet bed removal – Reduction – Targeted via RBM regimes and decrease with improvements in drainage
 - Changing Pads and Nylons – Reduction – majority delivered by refurbishment activity
 - Changing rail defects – Increase – expected increase of rail changed for defects such as dip angles, VLS and small pockets of very severe RCF, once eddy current has rolled out

Track - 3 of 3



S&C

- In CP6 a greater effort will be put into understanding maintenance requirements in S&C
 - URFDO S&C Inspection – Increase – Utilise U17 process for testing Tri metal welds annually
 - Fully Automatic crossing welding – Increase – Greater focus on preventative crossing maintenance utilising BV1000 equipment
 - Fully Automatic switch weld repair – Increase – TRK/053 has greater focus on weld repair to maintain switches, avoiding premature replacement
 - Changing timber bearers – Reduction – majority delivered by refurbishment activity

Service affecting failures

- As previously described, the LNW strategy aims to use RBM to create bespoke inspection regimes that aim to address the current trends in service affecting failure. The strategy set out below aims to address the following issues:-
 - Poor ride quality
 - Broken rails including IRJs
 - Cracked and broken crossings
 - Cyclic top speeds
 - Maintenance
- Maintenance, refurbishment and renewal will be prioritised in line with route criticality, to maximise improvements in reliability. A similar approach will be used to address wear in facing switches
- RBM will be used to create bespoke inspection regimes where PLPR will not be used as the primary means of inspection

Safety

- Delivery of the CP6 plan, will provide continued focus on passenger and work force safety, by utilising asset data to reduce manual inspections and enable Risk based prioritisation of defects as describe in the previous section above

Signalling - 1 of 2



Current Asset Performance

Performance

- It is expected numbers of signalling incidents causing delay will meet Route targets. Currently we are meeting all signalling targets excluding level crossing incidents which have increased due to problems experienced with level crossing motor brushes, and work is in place to rectify. Due to delay minutes per incident increases seen with increasing traffic on the network, the delay figures for the route may not be met at the end of CP5

Sustainability

- By the end of CP5 re-signalling schemes will have provided new assets at Gresty Lane, Liverpool Lime Street and Allerton, Runcorn, Halton Junction, Speke, and Ashton as well as new level crossings at Huncoat, Brierfield, Rufford, Low Mill, Rosewain (closure), Green Road, Whitbeck, and Low House. Enhancement projects as part of the Northern Hub, North West electrification, Halton BiDi Scheme and North South Wales JTI have increased capacity and improved asset life. CP5 has seen more signalling work than in previous control periods, and provides a fair asset base for CP6. Obsolete assets such as TDM69 have been totally replaced through the control period and success has been seen by recovering train operated points to release as spares for sites on the route to ensure a maintainable asset for CP6

Safety

- Level Crossing renewals have been prioritised above other assets in CP5 to remove Western Region level crossing barriers and Concrete Mark I pedestals (penguin) from the Route, and improve safety at these assets. Renewals funding has closed a level crossing and risk assessments at all level crossing sites prior to renewal have led to safety improvements. Safety improvements have also been made by renewal of Wigwag road traffic signals at level crossings to remove any 36W lamps. Signal structure condition was planned to decline through the control period in line with the future strategy for removal of signals under ERTMS schemes, with immediate safety concerns addressed by emergency works

Asset Performance at the end of CP6

Performance

- Over the control period, owing to the reduction of track circuit volumes and increased volume of axle counters, our train detection failures are planned to decrease. This is also consistent with our signalling power system failures following the implementation of renewal and enhancements schemes in the latter years of CP5 and early CP6. This investment will provide a more resilient power system architecture with intelligent infrastructure capabilities built in

Sustainability

- We are proposing the reduction in asset life across our interlockings in the north will be offset by renewals scheme at Birmingham New Street and Rugeley / Colwich schemes. To address the degradation in the north, our workbank shows a 70/30 split north and south expenditure, plus we are embarking on the full renewal of the Crewe area as part of the plan, an intervention in a critical part of the signalling network in the north. Whilst the signal failure is predicted to increase, this is only around 20 additional failures over the 5 year control period, which we will seek to reduce through closer working with our maintenance teams to understand and predict the root causes of these failures

Route policy

- We will be planning to carry out a full renewal on 4.8% of our asset base, and use detailed, granular asset condition data collected throughout CP5 under the ORBIS programme to target life extension on other assets. Re-signalling of the Crewe area to meet HS2 and Crewe Hub performance requirements have been submitted as part of our base plan submission

Signalling - 2 of 2



Asset life/sustainability

- Future development activity for works in CP7 is currently under further review due to the predicted level of renewals after CP6 (see Long Run Forecasts in Section 5.4.2 and Appendix F). In the meantime, we will work closely with the Digital Railway team and innovation towards the end of CP5 and through CP6 to understand how novel Digital Railway solutions might meet the needs of an increasingly ageing asset base. Detailed obsolescence strategies, combined with in depth knowledge of existing equipment and its condition will enable effective management of aging equipment. Average remaining level crossing life will decline by 4.3 years (from 12.2 in 18/19 to 7.9 in 23/24) as a result of this plan, but performance will be managed over this period with stealth upgrades using more reliable component parts

Interventions

- Nine level crossings will be renewed in CP6 with this plan and two of them will be subject to significant interventions. Experience developed in CP5 to maximise level crossing life by minimal external equipment renewal will continue in CP6 supported by risk assessed decision making
- In CP6 we will be touching 71 of the interlockings in the north with some minimal life extension work, and a further 12 interlockings will be re-signalled, renewing 802 complete Signalling Equivalent Units of equipment. (9.5% of the asset base). In the south, 4 interlockings will be re-signalled, renewing 400 complete SEUs of equipment. This will complete replacement of the last remaining 1960s vintage power signalling equipment on LNW(S) at Birmingham New Street and on the WCML south of Crewe in the Rugeley / Colwich area. Further works will be undertaken to address electronic system obsolescence, particularly on two interlockings in the West Midlands, and to undertake minor renewal works

Service affecting failures

- Modelled data based on ICM output with the forecast renewals and maintenance volumes in this plan is:-

Signalling Outputs	Units	CP5		CP6 SAF Incidents				CP6 (Percentage Change on Previous Year)					CP6 Totals
		18/19	19/20	20/21	21/22	22/23	23/24	19/20	20/21	21/22	22/23	23/24	
Remaining Asset Life	Years	14.9	14.1	13.3	13.5	13.0	12.9	-5.6%	-5.1%	1.3%	-3.5%	-1.0%	-14.0%
All Service-Affecting Failures	SAF	3569	3603	3617	3587	3573	3581	0.9%	0.4%	-0.8%	-0.4%	0.2%	0.4%
101 - Points (POE Only)	SAF	784	787	791	795	798	799	0.4%	0.6%	0.5%	0.4%	0.1%	1.9%
103 - Level Crossings	SAF	170	185	185	192	177	204	9.0%	0.2%	3.7%	-8.0%	15.4%	20.2%
301A - Signals	SAF	790	794	798	783	783	768	0.5%	0.5%	-1.8%	-0.1%	-1.9%	-2.7%
301B - Track Circuits	SAF	608	618	632	612	614	595	1.6%	2.2%	-3.2%	0.4%	-3.1%	-2.0%
301C - Axle Counters	SAF	467	467	472	493	502	542	0.2%	0.9%	4.6%	1.8%	7.9%	15.4%
302A - Interlockings & Control Points	SAF	560	561	548	521	507	482	0.2%	-2.4%	-4.8%	-2.6%	-5.0%	-14.6%
302B - Signalling Equipment Other	SAF	191	191	191	191	191	191	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Maintenance

- A good proportion of signalling equipment is now maintained using risk based maintenance regimes, the focus on increasing risk based maintenance regimes in CP6 is expected to be on track assets rather than signalling. Signalling equipment is increasingly monitored for condition, and there is expected to be a roll out of earth monitoring in equipment cases to add to the condition monitoring systems already in place for signalling supplies, points, track circuits, and axle counters. Signalling technicians are now highly skilled at using condition monitoring and event monitoring data, such that planned early interventions are seeing success at preventing failures. With new CBI systems installed and increasingly complex technology, the skill set and maintenance boundaries for signalling, IT, telecoms and E&P staff will become more specific and detailed, with all staff increasing their competency requirements. At the same time with a lot of traditional mechanical equipment in the north being life extended in CP6, the expertise of the central locking team, which has been wisely utilised through CP5, will be called upon for the future

Safety

- Safety levels for signalling equipment will be maintained, managed by occasional performance reductions to permit equipment remaining in service, or receive life extension. However, level crossing safety improvements have been scoped and submitted as part of the additional CP6 level crossing safety enhancements in Appendix D. This includes upgrade of 25% of our passive level crossing to active in CP6 with the aim of providing active crossing controls on all passive crossings by 2039

Geotechnical - 1 of 2



Current asset performance

Sustainability

- Earthwork sustainability during the Control Period has improved with the CP5 entry Earthwork Condition Score being 1.85 against a current score 1.79 (which is ahead of the CP5 modelled exit score of 1.82). This improvement is largely due to targeted remedial works via Minor Works (LNW Route “Activ-E” programme) at high risk sites, completion of the asset register with all LNW Earthworks having been examined with less than 0.1% non-compliance, and better use of existing Asset Management data

Performance

- LNW Route has had a large number of performance issues due to Adverse/Extreme weather events, some of which involved the closure of several lines for more than a month. The topography and geology of the route means that periods of extreme weather will continue to provide a risk to performance. Earthwork failures have accumulated 58,000 minutes of delay at a cost of £4.3m for years 1 to 3 of CP5. Use of blanket speeds during periods of wet weather has helped to mitigate the risk of such events but at a cost to performance

Safety

- Earthwork Safety during CP5 has been dominated by a large number of failures including major incidents such as Harbury, Eden Brows and Watford, the latter causing a serious derailment. The moving five year average for the route for CIV28 incidents stands at 34.2 per year, mainly due to a spike of 64 in 2014/15 from events due to Storms Desmond and Frank. This has by necessity led to a large number of interventions that are reactive rather than proactive and a “fix on failure” approach being adopted. Funding for these schemes has resulted in a build-up of “deferred renewals” as budget from identified items that were deemed less critical was diverted to these failed sites

Asset performance at the end of CP6

Sustainability

- LNW Route currently manages approx. 36,300 geotechnical assets. Based on the assumed CP6 funding levels, we currently plan to intervene on 4,310 assets (this number includes all renewal, refurbishment and maintenance activities) which represents interventions to 11.8% of our asset base
- This level of intervention represents a historic high, however this could result in further deterioration of the asset base from the CP5 exit levels as the number of Category ‘D’ and ‘E’ high risk sites are increasing

Performance

- Due to the large number of deferred interventions from CP5, the majority of available funding will primarily be focussed on the highest risk soil and rock cuttings with a small number of high profile embankment schemes. This will address approximately 35% of the 169 sites on the “Deferred Asset Register”
- We will also undertake further “line of route campaigns” during CP6 with their inherent delivery efficiency and ability to deliver large volumes of non-complex work on low asset critically lines that will as a minimum allow earthwork condition to be maintained at current levels
- Earthwork Performance during CP6 will be expected to be broadly in line with what has been experienced in CP5. Better use of Asset Management information and the increasing use of On-Track Plant will be used to minimise the use ESRs/TSRs to mitigate the risk of earthwork failure and better weather data and an understanding of what conditions lead to increased earthwork failures will start to come on line

Safety

- The pattern of the majority of Earthwork Failures being caused by adverse/extreme weather is expected to continue into CP6 and the amount of interventions that are reactive rather than proactive will also remain at current levels. Unallocated budget provision for such events will be made and the Drainage and Off-Track Teams Work Bank will be crucial in improving weather resilience to adverse/extreme weather events affecting the route
- In order to mitigate the risk of an earthwork failure event occurring at any perceived “at risk” sites (due to deferred renewals or adverse weather) not being remediated in CP6, Remote Condition Monitoring/Alarm systems (subject to the technology been available) will be rolled out across the route. Where this is not applicable, such as on embankment sites, the use of newly developed Earthwork Decision Support Tool to help predict potential issues, increased maintenance interventions to maintain track quality and ultimately ESRs/TSRs and will be employed to manage the risk

Geotechnical - 2 of 2



Summary of Interventions and Route Policy

Asset Life/Sustainability

- Although the actual CP5 exit score is expected to be better than the modelled score, the level of funding expected in CP6 will result in a decline in the overall asset condition during CP6

Route Policy

- LNW Route policy will be to undertake works on sites on the “Deferred Asset Register” whilst having sufficient unallocated budget to remediate failure sites caused by adverse/extreme weather. Asset Condition deterioration will be minimised by the continuation of the “Active” programme and “Line of Route” campaigns

Safety

- The bulk of the CP6 work bank will involve work being undertaken on soil and rock cutting slopes and this coupled with increased monitoring at Extreme Weather sites will be used to reduce the risk at high probability failure locations

Key Schemes

- Due to the increase in GRIP Stage 3 and 5 estimates, fewer major renewal schemes will be undertaken on LNW Route in CP6 than in CP5. However major interventions are planned at Blackthorn and Piddington embankment, Harbury Tunnel East Cutting and Arley Tunnel approach cuttings, all of which will see potential expenditure in the realm of £5-£10m at each site

New technology

- The increasing use of Remote Condition Monitoring/Alarm systems (subject to the technology been available) will be rolled out across the route in order to mitigate potential safety and performance concerns

CSAMS

- Better asset information in CP6 will mean that in many cases we will have the opportunity to revise our asset management approach from CP5. The introduction of CSAMS, the use of better monitoring technology, etc., will allow us to adopt a fully transparent whole life cost option rather than a potentially lower initial cost approach or a “fix on failure” methodology

Service Affecting Failures

- In order to better address the impacts of future adverse or extreme weather, we will co-ordinate with other asset teams, particularly Drainage & Off Track, to jointly identify and treat high risk locations to reduce the likelihood of future earthwork failures causing disruption to services

Drainage & Off Track - 1 of 2



Current Asset Performance

Sustainability

- The Industry sustainability measure for drainage tracks improvements in drainage condition and declares change annually. As we have an incomplete drainage asset register with a lack of condition data the results, whilst displaying a positive trend, do not present an accurate picture of either the condition of the drainage or improvements being made. LNW Route is undertaking a minimum 3 year programme to capture drainage asset properties and condition. We also plan to improve asset records for vegetation and fencing assets, for which there is currently no sustainability measure. This will improve our ability to track the benefits of investment in CP6

Performance

- The level of investment in CP5 has led to a substantial reduction in the number of TSR's associated with formation failure and consequent improvement in performance. Reductions in flooding incidents on the West Coast mainline have led to improved performance, particularly in the Northern parts of the Route
- Substantial investment in the boundary measures on the West Coast mainline in CP4 and at high trespass risk locations across the Route in the early years of CP5 have brought substantial improvements in delay due to incursion. 24% of the fencing assets remain in poor or very poor condition

Safety

- Improved drainage is reducing the incidents of failure on associated parent assets (Track and earthworks), and the Route continues to invest heavily in Woodland Management (vegetation clearance) to achieve and maintain compliance. The Route and Stakeholder perception is that reductions in incidents are being observed on areas where drainage and vegetation activities have been undertaken

Asset performance at the end of CP6

Sustainability

- There has been a historical lack of investment in Drainage and Off-Track assets and this plan represents a substantial increase in investment in these areas, albeit constrained by nationally set expenditure targets. In addition, the CP6 budget has been further supplemented by the RAM Track in recognition of the critical importance of drainage in preventing deterioration of track quality. A prioritised programme of drainage has been developed to maintain performance and improve the longevity of the formation renewals
- At the moment we are improving our asset data knowledge, to enable better decision making on our asset interventions and to understand their impact on overall asset condition. However we are confident that the focus provided by having a dedicated Drainage and Off Track team and by the increased funding levels will bring improvements in condition across all asset types
- Despite these increases in budget and delivery focus, we will not be able to deliver a fully Policy compliant asset renewals programme for Drainage

Safety

- This plan is based upon achieving compliance in vegetation clearance by CP8, and clearance in CP6 will therefore continue to target those locations which bring the greatest benefit in reducing risk. It is inevitable that high levels of reactive maintenance interventions will continue to be necessary on rural and freight routes (e.g. for signal or level crossing sighting issues) if performance is to not to be impacted
- We continue to prioritise the delivery of highway level crossing surfacing over-pedestrian and user-worked crossings in CP6 and will work closely with the RAM Level crossings to develop their investment programme to minimise safety risk. Changes to the standards planned for delivery in year 4 of CP5 will enable development of tools to better prioritise locations to minimise safety risk, but substantial investment beyond CP6 will be required to address all issues and achieve compliance

**Drainage & Off Track -
2 of 2**



Summary of Interventions

Route Policy

- The Drainage and Off-Track team manages a very diverse portfolio of neglected and underinvested assets. The CP6 plan allows for investment on all asset groups currently within our portfolio to varying degrees and the main focus for these underinvested asset groups (e.g. access steps, safe cess walkway, injurious species, RCM) will be on the development of asset registers and route specifications. This will allow planning for investment in CP7 and beyond
- For Fencing, the CP6 programme allows for compliance with current standards. Woodland (Vegetation) management is planned to deliver a lineside vegetation profile compliant to future standards with volumes based on what the industry can deliver. This pushes completion of the route programme for achieving a compliant vegetation profile into Year 1 of CP8

Service Affecting Failures

- Drainage volumes to be delivered have been risk-assessed against flooding or TSR imposition and have been compiled from schemes identified by the Route and Delivery Unit teams and deferred from CP5. As this volume for delivery significantly exceeds that possible in CP6 at currently predicted funding levels, no attempt has been made to achieve a Drainage policy compliant position. The degree of policy alignment has however been evaluated against the Drainage Decision Support tool
- Substantial improvements in asset knowledge and Route specifications are planned for CP6 and these will set the Route up for robust programmes of work in CP7 and beyond

E&P - 1 of 2



Current asset performance

Sustainability

- CP4 & CP5 delivery has been slower and more costly than anticipated. Increasing costs have led to more schemes being deferred. CP5 Policy required a more proactive renewal approach and the use of a median 'asset technical life' which provided a planning buffer to absorb these delivery delays

Performance

- E&P asset performance has been maintained by targeted interventions such as OLE defect removal and signalling power cable testing and replacement. Minor works funding has been used where specific safety and asset performance risks have been identified

Safety

- In CP5 we are in the process of delivering safety related OLE campaign changes in publically accessible areas.
- We are delivering a programme of electrical safety improvement work on the route. As part of this programme, we are introducing devices to provide Electricity at Work Regulations compliant isolations on our DC electrified routes and trialling of new isolation processes on our AC electrified lines
- A programme of signalling power defect removal has commenced. This work will be completed in CP6
- Emerging asset safety concerns are promptly addressed using minor works funding

E&P - 2 of 2



Asset performance at the end of CP6

Performance

- To maintain performance at the CP5 exit levels with an ageing asset base, we will undertake more predictive monitoring and intervene prior to failure using existing and new technologies
- We plan to employ more train borne monitoring to identify OLE defects prior to failure, using service trains to get the best coverage. New video analysis techniques offer a significant opportunity in this area
- Installation of more granular signalling power monitoring equipment will highlight safety and performance impacting cable failures

Sustainability

- The STE scenario guidance applies maximum 'Asset Technical Life' to all assets, except where the RAM has an overriding safety concern. This will have a significant impact upon sustainability of the plan, particularly for conductor rail and DC switchgear assets where a future bow wave of renewals is inevitable

Summary of interventions

Route policy

- Public and workforce safety has been prioritised
- We have adopted a 'predict and prevent' approach where renewal cannot be funded. Funding allowances have been made for 'minor works' interventions to support this approach
- Our most heavily used OLE will be subject to a heavy maintenance regime focussing on defect removal and reliability improving activities
- The renewal plan has been developed in accordance with STE guidance but we have exceeded the requirements where obsolescence poses an unacceptable risk

Asset life/sustainability

- Maximising asset life will inevitably reduce reliability and pose an increased performance risk if uncontrolled
- 'Predict and prevent' management of emerging defects and an increased reactive funding provision will largely control this risk

Interventions

- We will complete £70M of projects in CP6 which were due to be delivered in CP5 but have been deferred due to funding constraints
- Maintenance interventions in most areas will remain unchanged, except where we are undertaking condition monitoring to control the risk of renewal deferral. The new suite of signalling power working instructions will be embedded prior to CP6 – this will see a significant change in maintenance regime of signalling power assets

Service affecting failures

- Our predominant service affecting failures during CP5 have been caused by OLE and signalling power assets. We are continuing to complete OLE campaign changes, increase our focus on OLE defect removal and signalling power distribution renewal

Buildings - 1 of 2



Current asset performance

Sustainability

- Our current stewardship measure for stations has slightly improved since the start of CP5 whereas the reverse is the case for LMD's. There has been a significant increase in the number of faults being recorded on all asset groups, which is in part due to a deteriorating asset base, but also an improved fault reporting during the annual visual and 5 yearly detailed inspections of stations. The proposed CP5 accommodation strategy for MDU's did not receive funding with a resulting increase in safety related issues. Lineside assets continue in steady state although we have yet to fully evaluate the outputs of the CP5 Asset Data Information Project (ADIP) surveys

Safety

- Safety related fault volumes have increased mainly at MDU's and LMD's together with the inclusion of the Close Calls initiative. The focus of the CEFA surveys has been to focus on the high risk assets and reduce the risks posed by failures to these to both passengers and staff. The Buildings asset base has suffered from safety failures, but given the volume of passengers and workers utilising building assets daily, our risk level remains sustainable. Prime focus in CP5 was our structural capability of our assets, whereas in CP6, we are looking at a shift towards non-structural assets

Performance

- Performance of the asset continues to meet aspirations, however we have seen an increase in service affecting failures from a Buildings perspective with an increase in asset failures during CP5. We are looking to arrest this trend with a re-focus on risk based examination and targeting our planned preventative maintenance activities to most like assets to fail

Asset performance at the end of CP6

Sustainability

- Sustainability for stations will start to decrease due to limitations in repairs budget from the OPSAP project also we have identified a much larger budget for LMD, Lineside and MDU assets which ultimately impacts on the overall percentage share for stations. We will need to work much more closely with the station operators to not only are the maintenance obligations of both parties adhered to but they are delivered in the most efficient way and by those best placed to do. Best use will need to be made of access opportunities to drive costs down

Performance

- The increased asset knowledge, as a result of the ADIP and OPSAP (Operational Property Structural Assessment Project) programmes will undoubtedly see an increase on the number of faults requiring intervention that may otherwise impact on performance. It is therefore crucial that these risks be ranked and prioritised to allow mitigation. Without any additional budget being identified within CP6 then is likely that the risk to operational performance will increase

Safety

- The reduction of safety incidents will always be the primary objective. Due to a deteriorating asset base there is the potential for safety related fault reports to increase. We intend to introduce risk based asset inspections to reduce the potential risks and increasing our planned and reactive minor works budgets

Buildings - 2 of 2



Summary of interventions

Route policy

- Our approach is aligned with the national policy with some deviations and improvements due to local conditions within LNW. The CP6 plan will be largely maintenance driven interventions with a shift to a repair strategy than a pure renewals plan as per previous Control Periods. We plan to meet the proposed CP6 targets in terms of SSM and LMDSM for the Route, but also plan to improve our welfare accommodation and lineside building conditions, following a significant CP5 plan to understand our asset base more

Asset life/sustainability:

- Asset life will continue to be broadly maintained for our station assets through the control period. We will be working jointly with some Alliances and new franchisees on West Coast and West Midlands to create long term asset management plans for the asset base which are sustainably funded by all parties, whilst seeking 3rd party investment to improve those assets

Interventions

- We are viewing these over a much longer period than just the five year control period allowing us to begin removing the large cost estimate for full renewals being replaced by refurbishments or large scale repairs. Therefore, our interventions will be more frequent with larger volumes but lower interventions types to ensure we avoid costly full renewals in favour of cost-driven repair works designed to still meet customer outputs but at reduced costs. The in-housing of the CEFA team has allowed us to tailor the inspections and agree the methodology of the inspections to concentrate more on those assets that represent the most risk and identify suitable mitigation measures

Service affecting failures

- Within Buildings the ability to affect traditional railway measures (delay minutes, train PPM) is low due to the asset nature but the ability to directly affect customers, passengers and our workforce is incredibly high. To mitigate this, we are focusing on those assets which have a key interface and require close management by our teams and TOC's. We will continue to work hard with all of our stakeholders to provide a stable structure from which others can add the improvements for the customer. We are also planning larger interventions at our LMD's and MDU's to prevent additional asset failures / safety concerns which could seriously impact / close these facilities down. For Lineside we are completing our ADIP surveys to identify any immediate risks

Maintenance

- Our maintenance approach has improved in CP5 and we will continue this trend in CP6. We have completed a huge examination and assessment process in CP5 to understand our assets and their capability. In CP6, we will build on this knowledge by creating cost effective maintenance regimes looking towards LEAN principles with our Works Delivery colleagues. The significant challenge will be legislative compliance within the building portfolio. More than most of the other assets, the Buildings teams have over 50 statutory compliance measures to adhere to, all of which require robust plans and funding to achieve compliance. Our plan includes a step change to compliance, but the cost of this cannot be underestimated, especially when managing vast numbers of the public

Safety

- CP6 schemes are prioritised on a number of factors, safety being the main driver behind the risk, requirement to intervene, when to intervene and level of intervention. We will maintain the asset management Risk Register to allow for identification of additional Route funding

Structures - 1 of 2



Current Asset Performance

Sustainability

- Asset knowledge gathered through improved asset management processes indicates that condition and capability measures are declining
- 1,200 weak bridges are to be assessed, using complex finite element analysis where necessary, to demonstrate capability and minimise the physical interventions required
- Structures assets are generally in excess of 100 years old and continue to degrade. Bridge condition marking index has identified a continued decline with 23% of principal load bearing elements (PLBE) in under bridges and 12% of PLBE's in over line bridges been in poor condition. These defects will be risk assessed and interventions prioritised to ensure essential safety thresholds are maintained and performance impacts minimised

Performance

- Structures asset performance in LNW has been improved during CP5 through increased expenditure on asset maintenance and risk reduction programmes. This has removed the backlog of higher risk component defects, high risk scour and vehicle incursion sites

Safety

- Our intervention strategies have delivered reductions in risk profiles in critical areas as detailed above but unplanned asset component failures continue to occur due to overall asset age driving continued reduction in asset condition and capability

Asset Performance at the end of CP6

Sustainability

- With the investment levels proposed in this plan, the downward trend in asset condition is expected to continue with consequential impact on funding requirements in future control periods to maintain sustainability and safety levels

Safety & Performance

- We anticipate that with this plan the number of reported safety events will increase back to the same frequency experienced in CP4. We will mitigate this increasing safety risk through risk based examinations, additional monitoring and reactive works; only resorting to speed and loading restrictions as a last resort

Structures - 2 of 2



Summary of Interventions and Route Policy

Route Policy

- There will be a continued focus on risk reduction programmes in accordance with asset policy on scour, hidden shaft mitigation in tunnels, spandrel wall failures, asset signage and prevention of falling from heights

Asset Life/Sustainability

- The strategy will result in the selection of predominately “lowest initial cost” options been adopted rather than “lowest whole life cost”. Deterioration beyond the optimum economic point of intervention will increase costs in future control periods

Safety

- Maintaining critical safety requirements will remain the priority. Continued deterioration in condition will result in emerging defects requiring immediate intervention so increasing our focus on reactive and tactical management to effectively prioritise schemes. This will result in instability in the work bank

Key Schemes

- A continuation of the strategy adopted in CP5 to intervene with smaller repair solutions at larger number of assets to give the greatest impact on overall portfolio condition and performance means there will be fewer large and replacement interventions. The exceptions will be schemes to maintain major and critical assets; e.g. Runcorn Viaduct, Multi-span masonry viaducts and post-tensioned bridges. Preventative schemes are also planned on Leven’s and Esk Viaducts

New Technology

- We will minimise these negative impacts through the application of engineering excellence in the management of asset capability and risk, targeted application of asset monitoring and optimisation of in-house delivery mechanisms for best value
- Better asset information facilitated in CP6 through the rollout of the Civils Strategic Asset Management System (CSAM's) will allow improved prioritisation and timing of interventions to achieve safety and asset performance requirements

Service Affecting Failures

- Improved asset management processes and asset knowledge will allow the current levels of service effecting failures to maintained in CP6.

Delivery Mechanisms

- We will continue to refine and develop our CP6 plan across all structures asset types to achieve as stable and constant work bank as possible to facilitate efficient delivery. This appraisal will be aligned with Policy advice to prioritise safety and performance objectives
- Where ever possible our submission contains volumes determined by ‘bottom up’ development. It currently comprises many schemes originally planned for delivery in CP5 but further refinement through prioritisation will be necessary

Telecoms



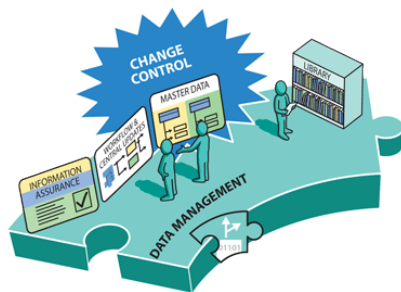
This section reflects the elements specific to LNW Route as contained in Network Rail Telecom's national strategy

- Works proposed to be concentrated on WCML to address concerns with aging telecoms equipment and power supplies to support assets
- Targeting level crossing improvements (including migrations to Network Rail services to aid performance), telephone concentrators and voice recorders
- Works proposed across all of the SISS assets on LNW Route and a reactive minor works budget allowance included for cable and route renewals. Significant budget evenly allocated on PA/PAVA, CIS and CCTV
- Some limited budget on DOO assets

NRT CP6 National Themes	Drivers
Transition to a single IP telecommunications network	Improve availability, performance, scalability and security of national connectivity and assets Remove non-maintainable and end-of-life assets and spares Reduce cost and complexity i.e. improve sustainability Exploit new technology and extend use of assets for passengers and lineside neighbours
Improve network management, monitoring and orchestration capabilities	Deliver better business knowledge enabling better business decisions
Standardise assets and services	Deliver open architecture enabling secure 'plug and play' Improve delivery lead times Reduce cost and complexity Simplify training and competency requirements Move towards an end-to-end SLA-focused delivery
Mature our business operations	Develop processes Deliver Operations Support Services (OSS) platform Ensure the right people have the right competencies for their role Develop self-service opportunities
Mitigate decline of asset sustainability level	Rectify underinvestment in assets from previous control periods
Extend the use of assets and infrastructure	Underpin the digital railway Satisfy government desire (from DfT & DCMS) for mobile connectivity on trains and digital inclusion for lineside neighbours Shape industrial strategy and policies

Safety, security and innovation feature throughout NRT's plans and activities

Asset data



Asset Data Governance

- Our approach to improving and sustaining accurate asset related data will be driven by the key principle of treating data as an asset in its own right
- To enact this philosophy, we have implemented a Route Data Manager post in the DRS&AM organisation who will own delivery of the Route Asset Data Governance Action Plan that is aimed at maintaining the A Grade data governance awarded in Control Period 5
- A central component to this will be the implementation of policy for data that is analogous to asset policies that support our physical assets. Our use of policy aims to coordinate but not dictate data management activities across LNW Route. The asset data policy implementation will establish:-
 - Asset Data principles which are to be followed
 - How the principles are to be adhered to
 - The link between the principles and the asset data quality management processes

Data Management

- The Route Data Manager role will also bring ‘ownership’ of the Asset Data management to a focal point in the route, in a similar way to the existing asset Route Asset Managers are the route lead for each asset type. The ownership of the data will still reside in the accountable asset discipline, but the Asset Data Governance framework (Policy, Process, People, Safety and Assurance) will be owned by the Route Data Manager
- The current suite of A2 data quality reports are being expanded to include all the newly defined Minimum Asset Data Requirements and we will work towards the industry set target of 95% completeness and validity score for all attributes. We will address the root cause of data quality issues and instigate improvements to prevent reoccurrence
- An LNW Route data ‘community of practice’ will be embedded by the start of CP6 which will bring together the asset data management and technical leads in a similar way to the existing Route Asset Manager periodic technical liaison forums

Asset Information

- Asset information is critical to maintenance and renewal decision making at both the strategic and tactical levels. Asset Management decisions are only as good as the data on which they are based. Asset information comprises all our data sets that are accessed through information systems which store, process and transmit asset management information
- Asset information supports all the primary decision and activity components covered in our asset management framework, including the development of optimised asset policies and the production and implementation of asset plans
- To process our raw asset data into useful asset information, we are building an online cloud based system to bring together, analyse and visualise all of the relevant data that informs the Asset Management System. Our plans will be live and visible to Asset Managers, Deliverers, Route Management, Stakeholders and Customers

5.2.3 Research & development

We have been working closely with our Franchise Operators and other industry partners in developing innovation in the field of Infrastructure Monitoring. This has led to us delivering incremental benefits to our ability to predict failure and gain important intelligence on our asset base in the key interface areas of Ride Quality in relationship to Track Quality and the Pan OLE Interface. Our work, and the findings of this research and development, is being shared across industry and with other Routes, and is directly linked to the National Strategies for R&D. We intend to continue to progress this work, turning those beneficial parts of the research into business as usual delivery and continuing to develop the capability to analyse our system data into intelligence going beyond predict and prevent and into the diagnostic phase.

Data analysis is our next focus area. We have a number of small discrete pieces of data analysis work being undertaken within development projects, our next activity is to link this work with newly created central team, Data Analytics. Our data from those development projects is now being shared with industry partners working on European research projects in the Shift2Rail and Horizon 2020 projects and we are helping to shape and set objectives for their outputs.

We have been and will continue to be keen to be a deliverer or trial route for many development projects funded by central led strategies and our ambition is to do more of this activity to develop our people and align those development projects to our asset strategies. We are the route representative on the STE Product Development Framework Panel which takes development projects from their concept seed corn ideas stage all the way through to industrialisation using the Rail industry Readiness Levels.

We have developed our understanding of the whole systems approach to problem solving. We want to take this into a place where this becomes the culture of our people, not just in our engineering and asset teams but right across our business and drive the approach with our customers, our contractors and our suppliers. We are driving this behaviour into the discussions with our franchise operators. We start this process at bidder meetings and then take this collaborative approach in development projects, problem solving workshops, customer focus groups, and eventually we see this as a standard operating model that can break down barriers that normally stifle innovation and positive change.

Our key message is that we are committed to a continuous improvement culture and research and development is one area that helps deliver that goal.

5.2.4 Weather resilience

We will continue to improve the weather resilience of our assets in CP6. We will seek to improve our ability to predict weather related events by enhanced risk assessments, remote monitoring and improved weather forecasting combined with a better understanding of the condition of our assets. We will also explore the development of proactive renewal requirements to consider extreme weather events such as equipment specification and positioning, but our base plan does not include an allowance for addressing the impacts of extreme weather events. Our assumption for CP6 is that should extreme weather events occur, funding will be available from central provisions (insurance or otherwise) to cover the costs of the works necessary to address their impacts.

We expect to see a reduction in the likelihood of safety critical incidents and the impact of weather related delays in CP6 arising from our improving drainage asset knowledge and a continuing focus on vegetation management. Should additional funding be available over and above that indicated in this plan, we will consider additional interventions to address further identified Adverse Weather sites in our Earthworks workbank and scour and flood protection works in Structures as outlined in the additional investment options in Appendix D.

We are also developing an LNW Route Extreme Weather Strategy for CP6 which will encompass the following elements:-

- Specification for weather forecasting and trigger levels
- Risk mitigation process for earthworks in adverse and extreme rainfall
- Flood management plan and database
- Critical drainage asset management
- Coastal strategy
- Signalling SMS A13 reinstating flooded or water affected equipment
- Scour (inc requirements at scour risk sites with bridges having spans >10m)
- Seasonal working arrangements
- Key Route strategies for adverse weather working
- List of 'At risk' assets for each discipline
- Ice in Tunnel Shafts
- Route strategy for proving trains
- EWAT process
- Scenario & stress testing requirements
- Remote monitoring strategy

This will enable us to better inform plans for implementation of specific weather resilience works in CP7. We have included options for additional investment covering weather resilience in Appendix D.



Flood resilience works at Caldew Junction, Carlisle

5.3 Operational plan

5.3.1 Train performance strategy (linked to plans in Appendix A)

We currently achieve good asset performance on LNW Route and as described in our objectives in Section 3 above, we are aiming to maintain this into CP6. There will be challenges to address in CP6, including continuing traffic growth, the construction of HS2, introduction of new train fleets and more congestion at stations amongst others. We will continue the approach used in CP5 whereby the LNW Route asset and performance teams have developed processes to deliver continuous improvement. We have a newly re-established Route Performance Structure working alongside the area teams to develop a cohesive Route wide performance strategy to ensure customers receive the same level of service and best practice is shared, embedded and improved. Improved risk management will be key to delivering a high performing railway and this will be done in conjunction with new technology.

Our overall objective for performance in CP6 is:-

- To deliver continuous improvement in response and recovery
- Risk Management and mitigation measures and identification of risk further out
- LNW to become the hub for innovation and trialling of new performance and safety improvement technology

We have included outline joint performance plans for our key operators in Appendix A. These will be updated on an annual basis as part of our collaborative approach with our operators. We have included Northern because, whilst LNE&EM Route are the Lead Route for Northern, over 50% of their services operate across LNW Route. We will work closely with LNE&EM Route and Northern to ensure a joined up approach to cross boundary performance issues.

Similarly, we also will look at cross-Route issues and better integration with the Freight and National Operators (FNPO) Route as regards performance management for operators. See also section 6.7.



5.3.2 Route operations strategy

In CP6 we will focus on the following operational issues:-

a) Control Systems

Throughout CP6 we will continue the development of our control systems, both for signalling and electrical systems, and we will work with the Digital Railway team to explore opportunities to deliver benefits to LNW Route and our customers. Areas we intend to develop include:-

- Automatic Route Setting/Dynamic Route Setting
- Platform Docking and TTP Editor
- Traffic Management
- SCADA updates for Electrical Control Rooms and migration to ROCs
- Scalable IECC at Sandhills

b) Incident Management

We recognise that effective incident management is a key element of minimising delays per incident and delivering great performance, and accordingly will pursue the following approach in CP6 in partnership with our operator colleagues:-

- Continue to develop robust contingency plans and review at each timetable change
- Test the plans on a regular basis with all stakeholders
- Adopt incident management tool giving benefits to control and TOC/FOC teams
- Explore opportunities for further co-located Control teams
- Develop and enhance NR Mobile Operations Managers suite of competencies



c) Staff Competence

As part of our continuous improvement approach for CP6, we will also aim to develop our staff competencies and culture in the following ways:-

- Explore possibilities for combined future roles – Signaller/Controller/Shift Signaller Manager particularly at West Midlands SCC
- A training and development programme that makes our operators highly skilled, engaged and competent
- Look at ways of challenging and improving our current operating rules to safely aid performance

5.3.3 Approach to resilience

Our approach to resilience in CP6 will align to the Network Rail Business Continuity Management (BCM) policy and BS ISO 22301:2012 'Societal Security – Business Continuity Management Systems – requirements'. We will maintain appropriate levels of resilience through annual review and continuous improvement of Business Impact Assessments (BIAs) and Business Continuity Plans (BCPs) - which will be developed at the end of CP5 - whilst also aligning and integrating with other organisational resilience activities including Enterprise Risk Management, Crisis Management and Operational Security. Validation (an exercise programme) and assurance processes will also be established.

Our CP6 approach will build on the following CP5 activities:-

- Identify critical activities and assets (physical, technical, logical, people, processes and key suppliers etc)
- Assess the current and future risk exposure of critical assets
- Define the impact of the activity and asset loss in terms of Corporate Risk Assessment Matrix (CRAM) scoring
- Prioritise activities and assets based on recovery needs
- Identify resilience mitigations to protect and allow for effective recovery of critical assets and activities
- Inform business continuity response plans to effectively recover operations

5.4 Output summary

5.4.1 Risk

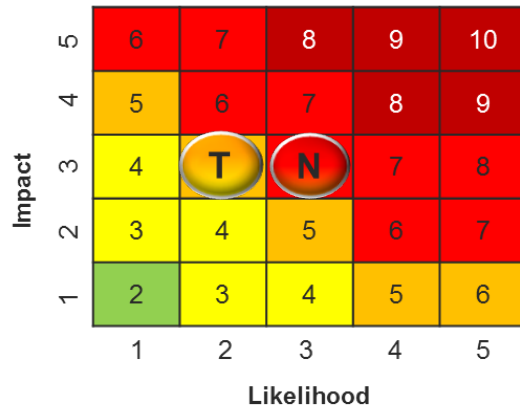
KEY

N = NOW – Current position

T = TARGET – position at end of CP6

This section outlines our view of our current position (denoted by N) and expected position at the end of CP6 (denoted by T) on safety, value for money, performance and reputation. In all instances our plan aims to improve our risk outcomes over CP6

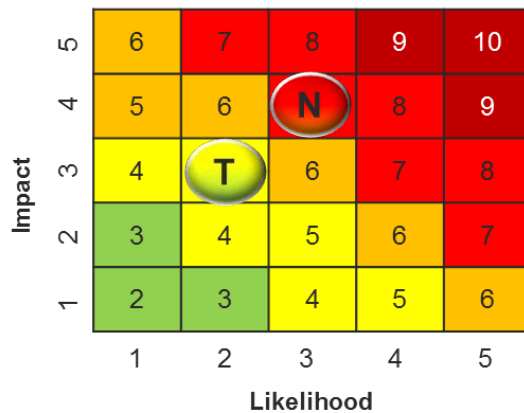
Safety



Summary of risk outcome

We remain committed to improving safety, health and the environment with our targets reflecting this. The constraints to deliver improvements include increasing asset age, reduced maintenance access, slow progress in our safety culture and factors such as more electrification, more trains, congestion at stations and public behaviour. Key facilitators for improvement in workforce safety will be accelerating the improvement in our safety culture, embedding Planning and Delivering Safe Work, and the abolition of Victorian lookout warning system with flags as the sole means of protection for our workers trackside. Key facilitators for improvement in passenger and public safety are industry collaboration and innovation

Value



Summary of risk outcome

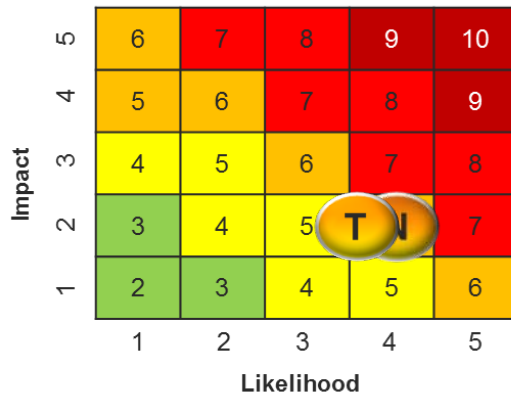
One of our primary objectives is to deliver best value for taxpayers in CP6. Key contributors will include Activity Based Planning and Risk Based Maintenance techniques for our maintenance activities, value based incentives for Infrastructure Projects and upgrading of our approach to clienting and selection of delivery partners. Risks include traffic growth and reduced access to undertake infrastructure works, supply chain capacity constraints (especially with HS2 in construction during CP6), and reduced ability to achieve forecast efficiencies

KEY

N = NOW – Current position

T = TARGET – position at end of CP6

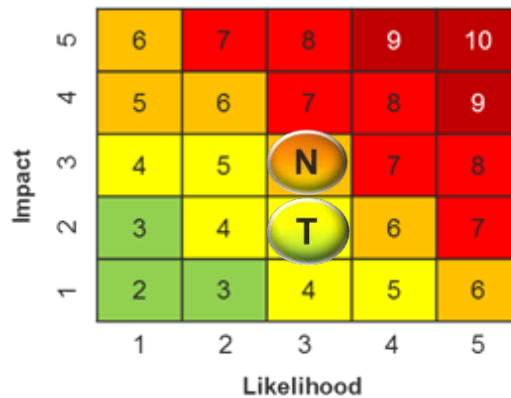
Performance



Summary of risk outcome

We have delivered good infrastructure reliability in CP5 and aim to continue this in CP6 despite a number of challenges to the Route, in particular the construction of HS2 and introduction of new train fleets by several operators. We have based our plan on the Euston mitigation measures being adopted now that Royal Assent for HS2 has been granted and that we can develop robust performance strategies with our operators to mitigate these and other issues. We are predicting that should we achieve this, we can sustain current infrastructure reliability levels throughout CP6

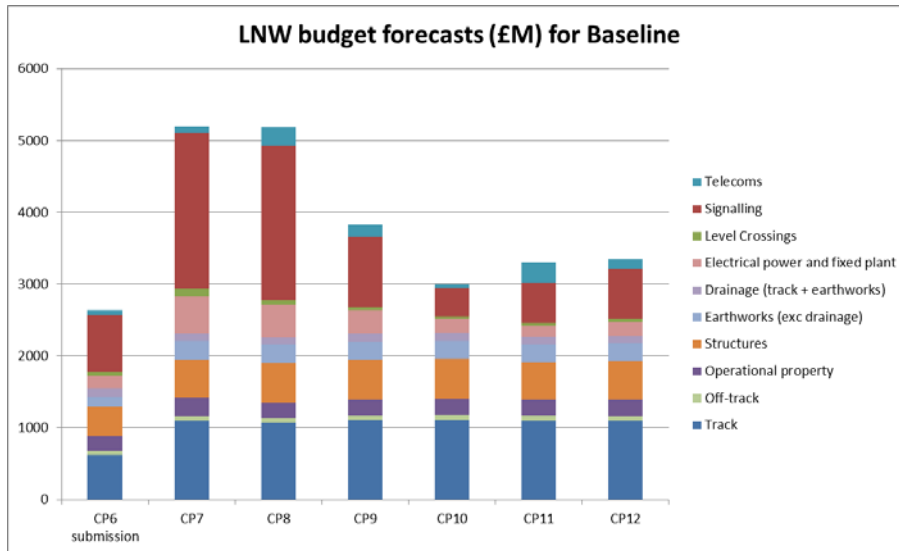
Political/ Reputation



Summary of risk outcome

HS2 is a major risk to LNW Route in CP6 and we will be working closely with them to mitigate impacts of their works. Communication and explanation of our activities to stakeholders and passengers, and the adoption of the Euston Mitigation measures by HS2, will be the primary measures to achieving our proposed target level. Should we achieve this, then we forecast a declining reputational impact in CP6 as more trains provide more capacity for customers

5.4.2 Long run forecast



- This graph describes the long term expenditure forecast to Control Period 12, assuming expenditure levels for CP6 are consistent with the levels outlined in this plan.
- Beyond the end of CP6, the assumed level of investment is that to retain the character (condition and performance) of the asset at CP6 levels.
- Individual asset condition and output long term trajectories for this long term level of spend can be found in Appendix F.

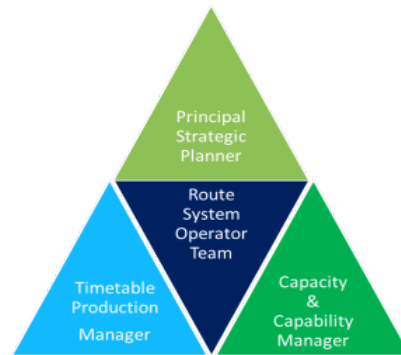
Expenditure and implications	Mitigations
<ul style="list-style-type: none"> • Proposed funding levels in CP6 have driven a reduction in renewals of track and S&C whilst increasing the amount of refurbishment activity to sustain the asset. This aligns with policy, will deliver short term reliability requirements but will lead to an impact of long term sustainability in CP7 and beyond, without a marked increase in funding. This may impact on national resources such as high output trains and signalling testing. Roll out of Digital Railway (DR) will have an adverse effect in the track asset, as capacity increases will impact on service life of the asset. This impact is still to be understood and modelled • Signalling bow wave of funding requirements continues through CP7 and CP8 as we look to move towards traffic management and other DR elements, competing against increasing asset obsolescence in the north of the Route. Deliverability is a concern with the sheer volume of signalling, however DR delivers less physical ground works which may reduce on site requirements. • Buildings and E&P remain static for the foreseeable future with key interventions planned to enable a consistent approach to asset remaining life • Increased structures examinations costs will be required to mitigate poor asset condition as a result of a greater need for monitoring. Performance restrictions to mitigate residual safety risks will impact on Schedule 4 costs 	<ul style="list-style-type: none"> • Increased train borne inspections will be required to offset tonnage increase facilitated by DR interventions. Improved designs of S&C components will improve asset reliability, but development is required to allow sustainable reballasting of concrete S&C layouts that can be delivered in short access opportunities. Full implementation of risk based maintenance will enable predict and prevent approaches to maintenance, improving reliability and lowering the whole life cost of the asset with right first time repairs • Signalling obsolescence is still a key risk on low priority routes where DR implementation is in the far distance. We are looking at strategic spares management and discussions with specialist companies to maintain competence. Renewals volumes for signalling in CP7 will be at record levels so a key driver for CP6 is to understand how we deliver this workload. • In E&P, the drive to utilise more technology for fault finding and prediction work will improve performance risk, but not necessarily drive down renewals volumes • Improved asset management capability and systems will allow structures to be managed safely to their safety limit

6 Customer focus & capacity strategy

6.1 System Operator

The System Operator (SO) is the function within Network Rail that is responsible for the creation, planning and allocation of capacity to run trains on the network. It is a central function that interfaces with ourselves and supports the delivery of strategic plans, timetables and sale of access rights. The System Operator has introduced a new working model to aid the Routes in planning timetable changes, influencing the franchising process and applying the Long Term Planning Process (LTPP) in collaboration with the Industry. This model is designed to clarify and promote effective relationships between the System Operator and the Routes and includes three key roles in the System Operator team that liaise with ourselves. These are:-

- Principal Strategic Planner
- Timetable Production Manager
- Capacity and Capability Manager



These three roles are dedicated to LNW Route and are co-located with the Route business, Other key high level relationships exist between the Principal Strategic Planner, Route Managing Director and Route Business Development Director. The Principal Strategic Planner and Capacity and Capability Manager will work with the Route to understand how proposed interventions developed through the LTPP and franchising processes might impact upon the network now and in the future.

6.2 Capacity & timetabling

LNW Route faces considerable and increasing demands. Linking people and goods to markets from London to Birmingham, Manchester and Liverpool to Scotland, and connecting towns and cities across the South East, Midlands and North West, LNW Route is the backbone of Britain and is fundamental to the country’s economic and social fabric and success.



The Ordsall Chord as recently constructed in Manchester

With continued growth in CP6, we will need to address congestion, improve performance and provide more and better journeys for passengers and freight users. Much of LNW Route is operating at or near passenger train capacity and further interventions are required to keep pace with passenger and freight demands.

In particular, on the West Coast Main Line, there is a clear need for the capacity that HS2 will deliver. However, that comes with the added challenge of continuing to operate the existing classic main line, supporting growing passenger numbers, and sustaining performance improvements during the construction of HS2 on and around LNW Route in CP6 at locations such as Euston, Handsacre Junction (near Lichfield), on the Water Orton Corridor and at Crewe.



Train entering platform 4 at Manchester Airport station. This was additional capacity provided under the Northern Hub programme

Elsewhere, capacity challenges include growth on Chiltern services to London Marylebone and serving commuters travelling to Manchester, Liverpool and Birmingham. Passenger capacity and circulation is already constrained at important stations on our route, including London Euston, Liverpool Central and Preston; University, Snow Hill and Moor Street in Birmingham; and Milton Keynes Central.

New franchises will provide opportunities to enhance the customer experience and are central to the industry's plans for supporting growth. LNW Route faces greater franchise-driven change in CP6 than any other route, and will need to work with the incoming franchisees for the West Midlands, West Coast Partnership, CrossCountry and Chiltern Railways, amongst others, on plans for service changes, longer trains, new fleets, new stations, depots and stabling.

In summary, the CP6 challenge is one of continuing to plan for and accommodate growth, on a network that is increasingly congested, whilst improving performance and connectivity. Our use of better timetabling techniques to produce the base timetable is key, along with plans to see us successfully recover quickly during times of disruption or perturbation.

As such our capacity and timetabling strategy will rely on:-

- Use of real time timetable / regulation simulations
- Leveraging benefits in the route of the Capacity Planning strategy
- Effective mitigations for the performance risks associated with HS2 construction
- Delivering committed enhancements in the North West
- Developing and delivering solutions for passenger capacity at key stations
- Collaborative delivery of more passenger capacity on trains through the West Midlands, West Coast Partnership, CrossCountry and Chiltern franchises
- Route integrated controls between operators and Network Rail

6.3 Future capacity & growth

Our System Operator colleagues work with the industry and stakeholders on the Long Term Planning Process to forecast demand and plan the capacity required over a 30 year horizon. This includes identifying and obtaining development funding for enhancement projects, before developing these through the early concept and development stages. Beyond meeting demand on trains and in stations in CP6, our strategy is to work collaboratively with funders and the System Operator to develop strategic enhancement programmes that will deliver long-term economic benefits.

This includes working closely with the emerging Sub-National Transport Bodies of Midlands Connect, Transport for the North and England's Economic Heartland, Local Enterprise Partnerships, and other third-party funders. This includes collaboration on programmes clearly aligned to the industry's long term strategic plans, national infrastructure and industrial strategies, and leveraging the benefits of HS2. These programmes include:-

- East-West Rail Phase 2
- Transpennine Route Upgrade
- Midlands Rail Hub and Midlands rail corridor enhancements
- Chilterns connectivity to Old Oak Common
- Northern Powerhouse Rail
- Cumbrian Coast Line enhancements in support of the new Moorside power station development and other third-party developers' proposals

We will seek to align future renewals plans with strategic enhancements, and take on development and delivery of schemes as appropriate once outputs are defined and funding is secured.

6.4 Digital Railway

The Digital Railway Programme (DRP) is a cross industry rail modernisation programme which will deliver benefits to passengers, business users and the national economy. The railway is already full in many places and more capacity is needed urgently to improve performance and the passenger experience. Changing the way the railway operates together with traditional infrastructure enhancements will release new capacity from the existing network.

Network Rail is committed to working collaboratively with rail operators and technology partners to develop cost effective and innovative solutions to the challenges of the railway. DRP is currently



working with various Routes to understand how DR can help them meet tomorrow's challenges of capacity, performance, safety and reliability in the most efficient, effective and economic way. These proposals are feeding into the DfT and Route's plans for CP6 linking future renewal plans with committed and planned enhancements and looking at opportunities for innovative funding and delivery options.

Although the LNW Route plan does not currently include any Digital Railway interventions, except where proposed as part of the Transpennine Route Upgrade, we see several opportunities for digital solutions on the route. These range from improving performance through a holistic approach to traffic management, particularly through the major inter-urban routes between Manchester (Castlefield Corridor), Preston, Crewe, Warrington and Liverpool, and on the West Coast mainline south of Rugby. We are also engaged in ongoing studies and discussions with DRP and the DfT with regard to the introduction of ETCS at Crewe, and Crewe to Weaver Junction, as part of the HS2 transition to the Classic Network, as well as other 3rd party infrastructure projects on the Route such as the Cumbrian Coast.

The recently established LNW Digital Rail Route Steering Board will identify and prioritise work to further explore the business case for these schemes. As a cross industry group, the Steering Board will ensure that our Digital Rail Strategy is aligned with the requirements of our industry partners.

6.5 Communications

LNW's CP6 external communications will target key stakeholders, including influential metro mayors (Manchester, Liverpool and the West Midlands), MPs and business people to support our strategic aims (our CP6 strategic vision) and theirs. Regular face-to-face dialogue with our Route Managing Director, or appropriate senior Route Executive member, will be our preferred method. We will also deploy Geoff Inskip, the chairman of our Chiltern and West Coast Supervisory Boards.



The aim of our communications strategy will be to embed a caring and inclusive culture needed for us to be a high-performing route team. This will drive an uplift in LNW's external reputation as measured by our ongoing customer survey. Internally our communications will centre on our 'Backbone of Britain' strategic vision: 'One team safely delivering excellent services for customers and taxpayers.' This will be the bedrock of the internal LNW brand, which will be based around the four 'how we do things around here' behaviours: customer-focused, team-players, responsible and speak up.

All activity will support our annually-updated LNW Route Communications Plan. In support of the LNW CP6 vision, the LNW communications team vision is: "Growing our capabilities to deliver a measurably improving communications service supporting LNW's business plan". For every milestone or issue, all communications channels will be considered under a LEAN policy framework to produce the best outcome for LNW Route.

Our sole scorecard metric for communications is achieving a 10% year-on-year reduction in railway work complaints. By achieving this each year until the end of CP6 in 2024, LNW Route and by extension Network Rail will have secured a material improvement in its external public reputation. This will result in us attracting and retaining the best talent and driving towards our diversity target of '20% by 2020' target (see Section 8.5 below).

Internal initiatives

- Continuous improvement: Drumbeat of relevant, business-focused communications to suit LNW's needs
- Ten-year focus: embed caring culture; 'how we do things'; Take 5; Backbone of Britain; Railway Upgrade Plan
- Frontline focus: training managers to communicate effectively face to face with their people
- Leadership visibility: Improved confidence in LNW's leaders as measured by the Your Voice staff survey

External initiatives

- Improved lineside neighbour communications reflected by a 10% year-on-year public and MP complaint reduction
- External advocacy, as measured by ongoing customer survey, reflecting a material improvement in our reputation
- Railway Upgrade Plan, Great North Rail Project, Midlands Rail Hub and industry disruptive impact campaign (HS2) messages landed as captured by external metrics

We want to be a caring and inclusive route business team. We have a refreshed Team LNW brand ('how we do things round here') centring on four behaviours (speak up, customer focused, responsible, team-players) that, if embedded, can transform us into the high-performing team we aspire to be. Our communications activity will help land these behaviours, which support our CP6 vision and developing brand.

Our strategy to get to the future includes:-

- Continual focus on our LNW vision, scorecard performance, and LNW behaviours will instil a caring Team LNW culture
- Embedding customer-focus throughout LNW Route and its suppliers, e.g., timely notification to neighbours for all forthcoming renewals and enhancement work
- Working with stakeholders such as Sub National Transport Bodies etc who provide huge opportunities to engage with businesses and key partners in their regions
- Whole-channel mindset: every story we tell we'll seek to feature across all channels (internal, MP, media, twitter, yammer etc)
- Delivering our annually-updated, costed route communications plan prioritising key external influencers (metro mayors, key MPs, business leaders etc) maximising key milestones and mitigating known risks
- Systematic repetition of key messages: Railway Upgrade Plan, Great North Rail Project (GNRP), 'working with,' 'short-term pain for long-term gain'
- Costed and jointly-delivered industry communications plans to keep customers on the move while upgrades take place, eg, HS2, GNRP
- Continually improving and changing our internal communications to suit our audience, eg, YamJams, videos, training communications trainers
- LNW brand development: Team LNW, Backbone of Britain, underpinned by our four 'how we do things round here' behaviours
- Employer of choice: positioning Team LNW as a great employer with a caring and inclusive culture



The significant Railway Upgrade Plan (RUP) items for CP6 include HS2, Midlands Rail Hub, East-West Rail and the Great North Rail Project (Northern Programmes). Risk-based communications plans for each of these programmes, supporting the wider LNW Route and national Network Rail narratives, will seek to mitigate reputational risks and maximise the benefits for Network Rail, the rail industry, stakeholders and Government.

We will also continue with stakeholder engagement regarding development of our CP6 plans and seek to better align our proposals with stakeholder requirements and objectives. A series of stakeholder workshops have been held in 2017 to receive feedback on previous iterations of this plan and this update incorporates issues raised (see Appendix G).

6.6 Property

Team LNW works collaboratively with Network Rail Property and uses strategic property and town planning advice together with associated property acquisitions and transactions to support the delivery of operational maintenance, renewals and enhancements on LNW Route, currently with particular support and emphasis on:

- East West Phase 2
- North Western Electrification Programme
- Close out actions relating to East West Phase 1, Ordsall Chord and Stafford - Norton Bridge projects
- Cumbrian coast
- Development of freight facilities
- Routine maintenance and renewals activities
- Office strategy with reference to Manchester Square One offices lease expiry and HS2 requirements

Continued focus in CP6 will be on engaging with Property and planning projects at an early stage to ensure that appropriate delivery strategies can be put in place to enable projects to be delivered efficiently. Early engagement will allow joint planning around the delivery of projects via Transport & Works Act Orders, Development Consent Orders or other agreed delivery methodologies.

Land Strategies

We will develop detailed land strategies with Property that help inform the optimum use of land potentially realising additional benefits, such as better operational facilities, the release of commercially developable land, bringing underutilised assets back into use for the benefit of the community and offering opportunities to lever in third party investment. Team LNW, through the System Operator and Sponsor teams, with the support of Property, will continue to build on the good record of LNW Route in attracting inward investment to the business (such as through developer contributions e.g. Birmingham New Street/Grand Central – see Section 9), making best use of relevant expertise and experience in commercial activities and initiatives particularly for station and network enhancements.

We have recently refreshed a survey of our land holding to help identify business development opportunities and inform future sales decisions.

An example of such opportunities is the joint LNW/Property master plan which is proposed for Watford Junction station in conjunction with Watford Council. The Council has a special interest in the station as Planning Authority with influence over the development of adjacent sites and the creation of new vehicular access to the station. The master plan will seek to address the major improvements that have been identified to meet forecast demand at this location.



Watford Junction master plan footprint

Disposals and Income Generation

Team LNW and Property working together will help to fund Network Rail’s Railway Upgrade Plan by selling assets not core to operations and seeking to release surplus railway land for housing to achieve Government targets. All sites that are being considered for disposal will be assessed to ensure operational uses can be protected, and where possible, enhanced. Land disposals are also underway where it presents a liability to the Network Rail to reduce costs. We are also looking to work more collaboratively with FOCs and TOCs to identify joint development and disposals which benefit the industry through reduced costs or enhancing passenger experience.



As regards income generation, we are working collaboratively with Property to maximise income opportunities at our stations through sale of further advertising space or provision of exhibition facilities.

Workplace management

Using our devolved Workplace Management team supported by Property our office accommodation will adhere to the Government Property Unit targets of 8sq.m per full time employee (FTE) and agility ratio of 7 desks to 10 FTE. This applies to the corporate estate but does not extend to Control Centres or Depots. By driving towards these targets, Team LNW will work its corporate estate more efficiently and realise OPEX savings where feasible.

In addition, we are working with Property on the development of “City Strategies” to look at all land and workplace properties held by all Network Rail divisions in a particular location, with a view to optimising occupation and releasing land for sale or early cessation of lease costs where possible.

Euston Station

The new HS2 terminal at Euston will impact the conventional station by reducing the footprint and number of platforms available for services on LNW Route. Accordingly, we have created the *Redevelopment of Euston Conventional Station (RECS)* project to explore options for Euston station following the completion of HS2 Phase One, and to set out a clear plan for any temporary works in the shorter term.

HS2 will reduce the platforms and area of the conventional station by approximately one third. The high speed station will also increase the demand for interchange capability at Euston. There is a case for the RECS project in terms of addressing current issues at the station including insufficient passenger capacity, ageing assets and poor user experience as well as planning for future drivers such as passenger growth, interchange requirements and continuing operations. Additionally RECS will provides opportunities to support regeneration of the wider Euston area.

RECS is developing the business case for Euston using the HM Treasury Green Book - 5 Case Model. The project is seeking authority to develop the Outline Business Case (GRIP 3 commencement) in April 2018 with development and design to continue into CP6. Major works are expected to commence in CP7 following the completion of HS2 Phase One.

Euston station phasing



6.7 Cross Route Liaison

From discussions with stakeholders, a key area of concern is how cross-route issues will be managed in CP6 as further devolution occurs. Very few of our operators are confined solely to LNW apart from Chiltern, West Midland Trains and Merseyrail.

Examples of our cross-route interfaces include:-

Route	Interfaces
Great Western	GW & WM services to Worcester Cross Country services from Oxford and Bristol Chiltern to Oxford
Wales	Arriva Trains Wales services to Birmingham and Manchester Virgin services to Holyhead
LNE & EM	Northern & Transpennine operators East Midlands Trains Cross Country to Newcastle etc
Scotland	Virgin West Coast services to Glasgow and Edinburgh Transpennine Express Freight operators
Anglia	Arriva Rail London services to Watford
South East	GTR (Southern) services to Milton Keynes
FNPO	All operators in FNPO
LU	Chiltern services on the Metropolitan line Extension of Metropolitan line services to Watford Jcn
TfGM	Metrolink services on NR infrastructure between Timperley and Altrincham, and at Manchester Victoria

Issues to be addressed include co-ordinated performance management, access planning and output realisation. We propose to develop our approach to managing across Route boundaries over CP5 as part of the development of our Access Management capability. We also recognise that where maintenance, renewal or enhancement activity is required on cross-border routes to Scotland, including for HS2 works, at least one route, either on LNW or LNE&EM Route will be kept available for the passage of timetabled sleeper, passenger and freight services through to and from London.

Included in this will be how we effectively work with the Freight and National Passenger Operators Route (FNPO) and this is detailed further below.

6.8 Freight & National Passenger Operators

a) Freight

LNW Route carries the most freight traffic in the UK and all of the Freight Operating Companies operate across the Route. The West Coast Main line and the corridor through the West Midlands to Oxford (and beyond) form the main arteries for container traffic, both Domestic and Deep Sea Intermodal, Royal Mail services and Automotive. Aggregate traffic from the quarries in the Peak District serve various terminals across the country. Since the reduction in coal fired power stations and the subsequent decline in coal traffic, the west – east traffic flows have changed to biomass (Liverpool to Drax) and new traffic such as sand and waste, which now operate across the Pennines.



Biomass traffic from Liverpool to Drax power station

Within LNW, there are a number of SFN schemes underway, these will see benefits in the North West, including line speed increases to and from the Port of Liverpool and signalling enhancements at Earlestown, which will help the biomass services and any new traffic to and from Liverpool. Loop lengthening at Buxton and alternations at Hindlow, will allow longer trains to operate to and from the quarries in the Peak District.

The development and construction of HS2 will be occurring during CP6 and will significantly impact freight operations on LNW Route, including the freight traffic that HS2 itself generates. We will ensure all existing freight customers are involved in project governance activities and will also work with them to both retain, and grow new business during the Control Period.

b) National Passenger Operators

Cross Country Trains and Caledonian Sleeper both operate on LNW route. Cross Country have their busy hub at Birmingham New Street, which see a large percentage all of their services each day operate through and Caledonian Sleeper use the West Coast mainline daily with overnight services to and from Scotland. LNW is a vital route for both operators and the advent of HS2 a concern for both in respect of how it will impact on their operations ahead of and after construction of the new line.



We understand that consistently good performance is critical to Cross Country as the majority of their passenger base is leisure and discretionary. The average Cross Country passenger only travels with them once or twice a year so every journey matters to them and they need to deliver consistently across the whole network and into a number of key nodes not just one major hub. 40% of their passengers interchange so right time delivery is crucial not only at Birmingham New Street but across the network.

As with other operators, minimal well-planned disruption is key, but particularly for Cross Country in recognising the impact multiple disruption has on a cross-route operator (See also section 6.7 above).



A number of charter operators use routes on LNW throughout the year, with the Settle & Carlisle line a particular favourite. Engineering access and the planning of these services are fundamental for the operators of these trains when a number run at weekends and at times when the majority of our maintenance, renewal and enhancement work takes place.

c) CP6 and beyond

Both FNPO and ourselves recognise that cross-route engineering access and regulation aligned to the needs of cross-route operators is key. Management of these aspects will be further developed in CP5 to provide more effective approaches to minimising disruption and co-ordinating access. Another sometime overlooked, but important area, is integrated transport solutions such as good parking at stations or convenient bus / tram connections to make a journey by train as simple as possible and attractive to the passenger which we will be exploring with our proposed partnerships to provide a seamless service.

There are a number of opportunities on LNW to meet future freight growth and demand. We will continue to trial longer and heavier trains on various routes; steel between South Wales and Wolverhampton, imported gypsum from Hull to Kirkby Thore in Cumbria, and aggregate trains out of Peak Forest to locations across the country.



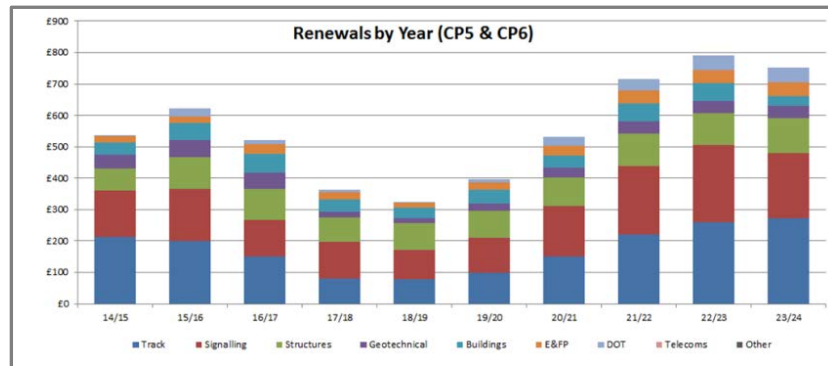
Intermodal traffic on the West Coast main line

Potential growth in the Domestic Intermodal freight traffic between Daventry and Scotland will be explored to get faster end-to-end journey times, increase the length of trains and meet the changing demands of customers. We will look at accelerating the journey time of the trains, joint working between System Operator, Freight Operating Companies and end customers will help drive this, as we free up more paths from the timetable, opening up more opportunities. Challenging the Loads Book on both weight and length will be another way of increasing growth, this will be done in partnership with FNPO, the FOCs and end-users.

7 Cost competitiveness & delivery strategy

7.1 Summary route deliverability statement

We have made initial assessments of the deliverability of our plans and we consider our track, signalling, earthworks, structures and buildings renewals proposals deliverable as they are of similar or smaller volumes than CP5 and we can utilise existing supply chains. We have also reviewed the likely step changes between the end of CP5 and the commencement of CP6 that this plan requires and the profiling of expenditure over CP6. We have received assurance from our delivery partners and supply chain that they are both achievable.



Key areas of delivery to be addressed include E&P, drainage and off track renewals. We have either constrained the increased expenditure to a level we consider deliverable in CP6 or reviewed delivery approaches to give better confidence of expected outcomes. We also anticipate being able to deliver the increased maintenance requirements proposed for CP6 by a combination of recruitment to address previously unresourced drainage and off track maintenance and better use of existing resources through use of Activity Based Planning and other analytics.

7.2 Access

It is recognised that access is a key factor that influences a range of strategy areas (e.g. timetabling, project delivery, maintenance etc.) and that is closely linked to the relationship with the customer. We anticipate access becoming a more scarce resource in CP6 as the duration of train operation increases, freight increasingly need 7 day operation on key corridors, and total shutdowns become less palatable.

We have trialled several initiatives in CP5 to integrate delivery of infrastructure works in conjunction with our customers and have learnt key lessons which we will apply to our approach in CP6. In particular, we will establish robust governance arrangements for the planning and delivery of works requiring access and commence dialogue with affected operators as soon as possible. We have also included benefits from the Safer Faster Isolations programme, particularly as regards enabling greater working time during possessions on electrified lines.

With the complex portfolio of works including major third party enhancements such as HS2 and Northern Powerhouse Rail, planned for CP6, access requirements will increase throughout Control Period. If not managed effectively the scale of work has the potential to cause unprecedented levels of disruption to Route operations. An updated governance approach is currently being developed to collate, integrate, control and communicate information from across enhancement, renewal and third party activity in order to provide support to the overall delivery of the portfolio. This will include deploying across our entire Route the approach we have used with HS2 for strategic access planning and the ability to address capacity planning, passenger handling, cross-route conflicts etc in advance of the formal access planning process timescales.

7.3 Maintenance delivery

To increase maintenance effectiveness and efficiency in CP6, seven areas of strategic focus have been identified:-

1. Define and clarify accountability for all aspects of maintenance, ensuring line of sight to corporate objectives
2. Progress enhanced asset condition monitoring and analytics to predict and prevent asset failure
3. Implement risk-based maintenance regimes
4. Produce activity-based maintenance business plans
5. Increase maintenance work planning capability to optimise cost, time and quality of maintenance delivery
6. Engage customers and stakeholders to agree the trade-off between maintenance access and train services
7. Make our people pivotal to planning, delivery and reviewing maintenance and provide them with the necessary tools, skills and competence and become a learning organisation through sharing best-practice and structured continuous improvement



New maintenance depot at Barrow-in-Furness opened in 2017

We are actively working with the STE Head of Maintenance organisation to develop, progress and implement a maintenance strategy required for CP6. The 7 key strategy areas will focus and structure the improvements in maintenance delivery.

Our new management structure established in 2017 has facilitated clearer accountabilities between the Route functions, in particular Asset Management and Maintenance Delivery, and we will build on the improved effectiveness throughout CP5 to be better prepared for CP6. Increased data analytics capability will drive through improvements and efficiency to maximise the use of intelligent infrastructure and risk based maintenance.

Activity Based maintenance planning is being embedded and has facilitated effective costing of our maintenance tasks. This is allowing better scenario planning of maintenance to test the effect of business planning variables and a better understanding of the trade-offs. It is also enabling enactment of maintenance accountabilities through clear linkage of the volumes and cost which will drive effective client monitoring and review.

Through increased planning capability and opportunities for work integration being visualised and understood, including the opportunity for benchmarking between different Delivery Units, we will drive efficient delivery and maximise the output quality. In addition, empowering our people to identify waste and inefficiency in the maintenance delivery processes and then implement improvements through the LEAN programme will be an ongoing focus in CP5 and through to CP6. We will work with the national Intelligent Infrastructure programme to progress the opportunities identified and maximise the benefits realised on LNW Route. We will also continue to develop the LNW Maintenance Management Working Group which brings together all the stakeholders for maintenance delivery to identify risks and opportunities and provide a focus for structured continuous improvement. Further details are contained within our LNW Route Maintenance Delivery Strategy.

In terms of maintenance access to the track, our approach for CP6 includes a combination of possession and red zone working. We will undertake maintenance activities in line blockages with additional protection where possible but will still use red zone working on quieter lines. This approach will be further developed, reviewed and monitored by our Safer Track Access Programme Board. The Board will focus on the following key improvement projects:-

- Line Blockages
- Controlled Access to the Track
- Standard 019 +

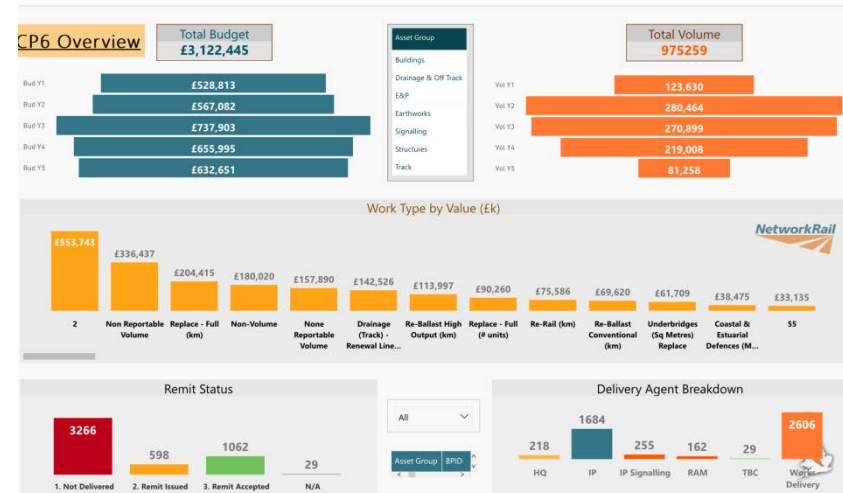
and the following compliance / enabling projects:-

- Implementation of LOWS / SATWS
- Working on Gradient (Risk of Runaways)
- Risk of Run Through Process
- Controlled Planning Diagrams
- Safety Critical Communications

Finally, as part of our commitment to achieving a workforce comprising 20% female staff by 2020, we are investing in improved welfare facilities for maintenance staff in CP6 by upgrades at all Delivery Units and the provision of mobile welfare units across the Route.

7.4 Project delivery

We recognise that to realise our delivery efficiencies based on stable workbanks, integrated access planning, robust change control etc, we need to upgrade our approach to clienting renewals in CP6. Our first step has been to assemble our asset strategies, workbanks, maintenance volumes etc into SharpCloud (See Section 5.2.1 above) and use PowerBI to provide analytics for interactive visualisations of work types, locations, deliverer allocations, spend profiles, etc.



This enables us to give our delivery teams and supply chain visibility of our proposals for CP6 and plan their strategies accordingly. As part of this we are moving to annualised workbanks for renewals to promote early definition, lock down of budget and opportunity for innovation by the supply chain. It is our intention to achieve this for the first two years of CP6 by mid-2018.

In parallel, we are working on delivery strategies for our CP6 workbanks with our delivery partners and are developing scenarios for the optimum delivery model. These are being shaped by considerations of the likely market in CP6, especially with HS2 under full construction and from feedback from reviews of current delivery arrangements and lessons learnt. We have already made initial work allocations to prospective delivery partners, whether it be Infrastructure Projects, LNW Route Works Delivery, other NR delivery options (e.g. Infrastructure Construction & Engineering (ICE) or to trial a direct contracting approach for contestable schemes.

We have worked closely with Infrastructure Projects to take a detailed review of our renewals delivery arrangements. We reviewed lessons learned from CP5 and analysed the CP6 workbank profile to develop a clear set of objectives aimed at improving Safety, Deliverability and Financial performance in CP6. We have developed a list of Process and Terms & Conditions changes required to deliver these objectives. The initial proposals regarding key renewals frameworks are now progressing through our contracts approvals process to allow scheme development for CP6 to commence in a timely manner. Similar discussions are also being held as regards national frameworks in track, signalling and other assets to ensure lessons learnt are incorporated and our supply chain is engaged ready to delivery our CP6 volumes from day one.

It is also our intention to continue, where appropriate, other existing renewals delivery arrangements into CP6 to minimise the impact of the transition between Control Periods and of any delays in establishing alternative arrangements. We intend to conclude our consideration of our delivery arrangements for CP6 by mid-2018 to enable a seamless transition into CP6.

In all of the proposed delivery options we are building in the principles of ensuring alignment, integration and collaboration between delivery partners and the establishment of an integrated Transformation PMO to monitor and drive the efficiencies and changes required to deliver our plan successfully.

As part of our assessment of the deliverability of our plans, we have reviewed the workbank definition, key resource availability, access requirements, cost confidence and certainty of deliverer for all asset renewals activities across CP6 as part of our Route level assurance of our plan, and similar assessments have been made for potential Enhancement schemes currently in development. In addition we have reviewed the ramp up in activity from Year 5 of CP5 into Year 1 of CP6 and assured ourselves that this will be deliverable.



Tandem tamping at Bletchley

7.5 Supply chain

We have commenced discussions with our supply chain regarding our plans for CP6. This has included holding a workshop with suppliers in January 2018, outlining what we will do to improve delivery confidence and demonstrating how we will give them visibility of our workbanks and plans through the SharpCloud system. This will enable our supply chain to better shape their strategies to align with our requirements and approach for CP6, and we are intending to hold further workshops in due course.

7.6 Route Services

Route Services supplies Route Businesses with the services we decide are best provided from a national team. This approach enables national coordination, and for Network Rail to benefit from economies of scale and greater efficiency from specialised delivery. Route Services consists of four primary functions. **Supply Chain Operations** (SCO) delivers the logistics, materials, components and fleet that enable the maintenance and renewal of our railway infrastructure. **IT** shapes, builds and runs the technology services needed to support our railway, now and into the future. **Business Services** manages and delivers support services on our behalf such as shared services, and training, and **Contracts and Procurement** (C&P) secures and manages the national contracts and supplier relationships which we rely on.










High Output ballast cleaning on the West Coast Main Line

New rail grinding trains procured by Route Services










In LNW Route we work most closely with the Supply Chain Operations team in Route Services, both in terms of developing our long term strategy and business plan, and also jointly focussing on the regional delivery of key services to our asset management and operational teams. We have shared our CP6 plans with SCO, confirmed the deliverability of the volumes we propose both in terms of materials and plant such as On Track machines, and incorporated the efficiency plans of SCO into our overall efficiency strategy for CP6.

We also liaise regularly with our key contacts within IT and Business Services, and we are collaborating with Route Services C&P to develop a devolved operating model for end to end category strategy, to optimise national economies of scale with local empowerment. We include senior members of the Route Services leadership team within our Route Executive, and also our key functional meetings, and feel that Route Services is a trusted deliver partner. This allows us to both influence and benefit from the Route Services Transformational workstreams, including increased efficiency and Route choices, and the benchmarking and commercialisation of services. As such, our strategic business plans are closely aligned, with some specific areas of efficiency and opportunity identified, including the introduction of rail milling to reduce the re-railing requirement, and the joint planning of tamping in order to minimise the number of machines required, and maximise their utilisation.

KEY	
	Rates from IP Track
	Historic derived rates
	Locally derived rates
	ICM rates from IP Signalling
	CP5 framework rates
	National unit rates
	First principles estimates

7.7 Costing approach

The table below indicates the basis of pricing of our CP6 workbanks and the likely deliverer:-

Asset	Supplier of cost	Basis of cost	% of asset covered	Rates used
Track	IP Track	Forecast rates from IP Track	69	
	IP Central	Historic delivered rates	1	
	Works Delivery	Historic delivered rates	28	
	Other	Locally derived rates	2	
Signalling	IP Signalling	ICM rates as developed by IP Signalling	66	
	IP Central	ICM rates as developed by IP Signalling	18	
	Works Delivery	Locally derived rates	13	
	Other	Locally derived rates	3	
Structures	IP Central	Framework rates	45	
		Forecast rates or national rates	5	
		First principles estimate	3.5	
Works Delivery	Historic delivered rates	46.5		
E&P	IP Central	Framework rates where applicable	15	
		Forecast rates based on uplift from CP5 rates	35	
	Works Delivery	Historic delivered rates	5	
		Forecast rates	5	
Locally derived	Locally derived rates used for OLE campaign changes etc where not covered by standard rates	40		
Geotech	IP Central	Framework rates	5	
		Forecast rates	9	
		First principles estimate or National Average Unit Rates	43	
	Works Delivery	Historic delivered rates	15	
		Forecast rates	6	
First principles estimate or National Average Unit Rates		19		
Other (Development etc)	First principles estimate	3		
Buildings	IP Central	Forecast rates	20	
		First principles estimate	3	
	Works Delivery	Historic delivered rates	70	
Other (Development etc)	Locally derived first principles estimate	7		
Drainage & Off Track	IP Track	Historic delivered rates	28	
	IP Central	Historic delivered rates	37	
	Works Delivery	Historic delivered rates	35	

7.8 Headwinds and efficiency

Summary of overall efficiency and headwinds in our plan

Totex (O,M,R)	Year			Year					
	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	CP6 total
Core plan (£m)	1002.5	844.0	808.9	1,015.6	1,085.9	1,207.9	1,176.4	1,098.7	5,584.5
Head winds (%)	0.0	0.0	0.0	2.41%	2.11%	2.16%	2.33%	2.43%	2.28%
Efficiency (%)	0.0	0.0	0.0	-6.34%	-6.82%	-7.23%	-8.09%	-9.25%	-7.57%
Post-HW, post-Eff spend (£m)	1002.5	844.0	808.9	975.4	1,034.1	1,146.0	1,107.3	1,022.0	5,285.8

Within this plan, we have proposed the following net efficiencies on the renewals base cost:-

CAPEX renewals	Pre-efficient cost (£m)	Proposed net efficiency (£m)	Post efficient cost (£m)	% Efficiency
Track	773.6	-90.6	683.0	-11.71%
Signalling	610.4	-29.7	580.7	-4.87%
Structures	439.9	-31.6	408.3	-7.18%
Earthworks	165.0	-15.0	150.0	-9.09%
Drainage	108.1	-10.0	98.1	-9.25%
Buildings	214.1	-17.6	196.5	-8.22%
Electrification & Fixed Plant	154.0	-15.1	138.9	-9.81%
TOTALS	2,465.1	-209.6	2,255.5	-8.5%

NB Crewe HS2 Integration works have had no headwinds or efficiencies applied and are in addition to the above totals

Renewals headwinds and efficiency by theme

Theme	Area	Description	Net % change
Access (3)	Efficiency (3a)	Better use of possessions - Right time starts, Safer Faster Isolations etc Optimisation of access plan and joint use of possessions	0.5% reduction
	Headwind (3d)	Reduced access due to longer operating hours etc Increased cost of third party land access to structures, earthworks and other worksites Complexity due to additional electrification installed in CP5	
Workbank planning (4)	Efficiency (4a)	Achievement of better workbank stability by improving our management model Early development and packaging to reduce extent and scale of changes later Smoother work plans to reduce under-utilisation of supply chain resources	0.9% reduction
	Headwind (4d)	Synergies between enhancements and renewals work in CP5 not being repeated in CP6 Environmental issues (e.g. planned SSSI) incurring additional costs	
Technology (5)	Efficiency (5a)	Innovation and technological development within assets and delivery teams Application of Remote Condition Monitoring to better judge intervention times	0.1% reduction
	Headwind (5d)	Obsolete technology - higher support costs, scarce resources, skills fade, etc.	
Delivery (6)	Efficiency (6a)	DWWP right first time to minimise additional possession costs etc Innovative delivery techniques to reduce overall cost of works Development of LNW Works Delivery capability Earlier scope definition and early contractor involvement in specifications	1.2% reduction
	Headwind (6d)	Local impact of HS2 on LNW renewals activities (supply chain, key resources etc) Increased task complexity than accounted for in the estimates	
Design (7)	Efficiency (7a)	Minimum specification solutions – lowest initial cost options selected in preference Earlier scope definition/earlier contractor involvement to optimise design Standard designs to minimise design effort and rework	0.7% reduction
	Headwind (7d)	Policy & legislative changes impacting specification and scope	
Commercial (8)	Efficiency (8a)	IP Track re-organisation and revised fixed cost allocation in CP6 SCO Contracting strategy and volume effect Alternative IP contracting strategies and better framework rates Dispute avoidance to minimise late impacts on AFCs	2.2% reduction
	Headwind (8d)	Increased contract rates driven by market pressures Re-mobilisation costs following end-CP5 ramp-down	
Other (9)	Efficiency (9a)	Work mix/scope efficiency Structured continuous improvement / LEAN Better every day approach made 'business as usual'	1.4% reduction
	Headwind (9d)	None identified	

7.9 Risk and uncertainty in the CP6 plan

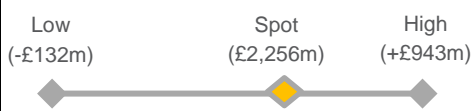
The pre-efficient costs in our plan are based on 'current rates' but include any additional scope needed to deliver the outputs in the plan. We have used 2017/18 unit rates to develop our capital expenditure forecasts and CP5 exit rates for support, operations and maintenance expenditure forecasts. Drivers 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.

Current unit rates are likely to include some risks that were not originally included in CP5 plans but that have materialised during the current control period. As a result of this approach, it is likely that some risk and uncertainty is already be included in our core CP6 plan, as we have not sought to remove the impact of these unplanned events from our unit rates.

Uncertainty ranges for CP6

The information in the table below presents our estimate of the overall range of uncertainty across our expenditure and income for CP6. We have also identified the main drivers of these ranges. The information in this table is based on the detailed inputs provided in our OPEX, renewals and income submissions. Headwinds and efficiencies are included in the spot estimates.

Area (S, O, M, R, Income)	Potential range (low – spot – high)	Summary of key drivers of the uncertainty range	
		Driver of range	% of range
Renewals	<p>Low (-£132m)</p> <p>Spot (£2,256m)</p> <p>High (+£943m)</p> 	Uncertainty within our Track renewals workbank accounts for the highest percentage of CP6 renewals uncertainty. This is due to the range of possible outcomes of the revised contracting strategy with IP Track, the impact of location and work mix on costs, material cost fluctuations and the range of methodologies that could be adopted	29%
		The next largest contributor to renewals uncertainty in CP6 is with regards to Signalling pricing. Our renewals costs are dependent on the accuracy of the ICM model and its spread of spend and there is a lack of clarity on what validation has been undertaken on ICM rates and add on costs. In addition, further uncertainty has arisen due to the large increase in rates seen from predicted CP5 rates, and the impact of CP5 Enhancement projects on contractor resources, driving up costs. Limited visibility of similar schemes in CP6 adds additional uncertainty	23%
		Our third largest contributor to renewals uncertainty is within our Structures renewals. Here, the uncertainty is driven by the range of possible outcomes of the IP delivery strategy review, the likely availability of critical contractor/consultant resource with HS2 under construction in CP6, and availability of disruptive track access to undertake the work. In addition, the exact scope of works for each site is currently unknown and there is a high risk that actual cost are different once the scope of work has been finalised	15%
		Further uncertainty is in Earthworks which includes project specific risks such as land access and land take requirements, ecological issues, experience from CP4 and CP5 delivery, potential further deterioration of assets throughout CP5 and over CP6 and possible policy changes. Additional uncertainty has been included for use of National Average Unit Rates and early GRIP Stage estimates where there is little long term data to validate costings	10%
		Uncertainty in our Buildings renewals proposals is primarily driven by our confidence in the locally derived rates we have used in the absence of any national unit rates. Our local rates have been developed in conjunction with LNE Route and with a range based on previous QCRA experience of indicative estimates	8%

NB The 'Spot' total excludes the £270m contribution for Crewe HS2 Integration Works as no uncertainty, efficiencies or headwinds have been applied to this item

Area (S, O, M, R, Income)	Potential range (low – spot – high)	Summary of key drivers of the uncertainty range	
		Driver of range	% of range
Maintenance	<p>Low (-£131m) Spot (£1,863m) High (+£107m)</p>	The main driver of uncertainty within maintenance is the scale of likely benefits that can be achieved from the Intelligent Infrastructure Programme through the Control Period. Possible benefits range from £22m to £88m and we intend to work with the Programme to maximise them on behalf of the Route	27%
		We have ambitious targets to achieve further benefits from our LEAN Programme in CP6 but there is a risk that these may not be fully achievable given the increasing difficulty of realisation in a more efficient and low waste environment. This uncertainty contributes £29m of the overall range	13%
		Our organisation restructure proposals for CP6 have significant dependencies on factors outwith our control and this uncertainty provides some £24m of the range	10%
		Access uncertainty as traffic growth continues contributes £20m to the range	9%
Support and operations	<p>Low (-£3m) Spot (£897m) High (+£9m)</p>	Our key risk in Support & Operations is the number of autumn circuits required by Rail Head Treatment Trains exceeding those we have allowed for in our plan. We have assessed this contributing at £6m to the overall range	27%
		There is a risk that our recruitment of additional staff in CP6 to address Fatigue Management does not proceed as planned. This contributes £3.4m to the range of uncertainty	15%
		There is a risk that the planned signalling reconcontrols into our Operating Centres in CP6 are not implemented as proposed and the associated organisation savings are not realised in the expected timescales. We have assessed the scale of this risk at £3m	14%
Total expenditure	<p>Low (-£265m) Spot (£5,016m) High (+£1,059m)</p>	<p>Our overall uncertainty range is -5% to +21%. The two greatest contributors to this are the uncertainty about the level of benefits from the Intelligent Infrastructure Programme and the scale of efficiencies achievable within Track renewals through revised contracting strategies and other approaches</p> <p>NB The 'Spot' total excludes the £270m contribution for Crewe HS2 Integration Works as no uncertainty, efficiencies or headwinds have been applied to this item</p>	
Income	<p>Low (-£31m) Spot (£800m) High (+£18m)</p>	Main driver for the range on our income forecasts is the uncertainty around the forecast traffic growth in CP6 and its impact on our variable track access income	89%
		Similarly, the likely range of income from Electric Asset Usage is driven by the same uncertainty in forecast traffic growth	11%
<p>NOTES Fixed Track Access has been excluded as this is calculated centrally and not included in these figures. We have assumed no impact due to changes in Schedule 4 as we will recover the cost via Schedule 4 ACS with the Lead TOC's, and we have assumed a zero position on Schedule 8 for CP6 as the regime has not yet been finalised</p>			

8 Culture strategy

8.1 Safety



Everyone in LNW Route has a role to play in keeping themselves, their colleagues, passengers and members of the public safe every day. Our journey is as much about personal responsibility as

it is about corporate action. If we are to ensure that everyone indeed goes home safely every day then everyone has both a right and an obligation to be involved in delivering and achieving this vision.

How we feel, what we believe, and how we behave in the Route is critical in reducing harm. A mature culture will not only make us safer, it will enable us to achieve better performance, improve our diversity, make us a more inclusive business, and provide a liberating and enjoyable place to work. We will take a leading role in improving culture, seeking to bring with us our contractors and organisations we work alongside.

The key facets of an inclusive and mature safety culture are:

Being risk-aware – A culture in which we are aware of the risks we face, we encourage open discussions to identify ways of reducing risks and where ‘looking after your colleagues’ is part of great teamwork

Being treated fairly – A culture in which everyone is trusted to work responsibly within clear and simple boundaries, where the consequences of being unsafe are clear and where we support everyone to work safely

Feeling able to report concerns – A culture in which we actively identify and report hazards, unsafe conditions, unsafe acts, close calls, and assets of concern, in a blame free environment

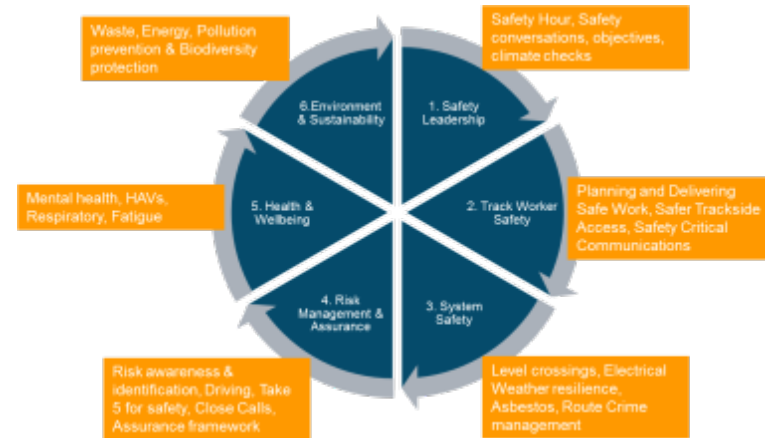
Having the desire to learn – A culture in which we provide and openly seek constructive challenge and feedback, learn from our mistakes and make changes to our business to prevent repeat incidents from occurring

Being free to innovate – A culture in which we are open to different ideas, views and perspectives, where we have the courage to challenge the status quo, and where innovation to make the railway safer is the norm

Feeling included – A culture in which everyone plays their role in delivering a safe environment, where our business processes actively support our safety vision and where we value all opinions on safety

By embedding our behaviours and values in everything we do, we will drive the cultural changes needed to achieve our vision and strategic objectives.

Whilst we will continue our successful ‘Take 5 for Safety’ initiative, our key objective for CP6 is to reduce our LTIFR to 0.17 as described in Section 3 above. This forms the cornerstone of our **LNW Six point Plan** for CP6 which covers the following aspects:-.



In addition we will incorporate improved track access for our maintenance staff (see Section 7.3), provide welfare facilities within 20 mins from all access points linked to general improvements to depots and facilities, realise benefits from the National Home Safe Plan in CP6, and the Electrical Safety Improvement Programme.



8.2 Change

We will continue to embed Route devolution and operate like an autonomous business accountable for delivering to its customers and stakeholders effectively and efficiently, and will continue to attract external investment with the objective of reducing the government subsidy to the route.

Our vision is to become a more open, diverse and inclusive organisation that is a great place to work, with great people and where safety and performance go hand in hand. This includes our aim to become an industry leader at managing mental health. We will also continue to use the principles of LEAN and structured continuous improvement as an enabler to delivering efficiencies across the route.

Strategies and governance to support change in our Route will include:-

- Strategic Workforce Planning
- Transport Infrastructure Skills Strategy
- IR Route strategy / resilience against industrial action
- Engagement strategy
- Lean learning academy
- People Executive Review Meeting
- Organisational change panel

8.3 Organisational capability

Our strategy for organisational capability, as described in the LNW Talent Strategy, aims at attracting and managing talent within the Route to improve performance and minimise the short to long term skills gap risks for the business during CP6. The strategy covers three core elements, namely early engagement, emerging talent, and career development which will maximise the return on investment.

a) *Early engagement strategy*

The early engagement strategy focuses on the ways in which we attract and retain people into LNW Route and encourage those at an early age to consider working within the rail industry. The plan encompasses a number of pipelines as follows, which cover all areas of skill shortages from entry level roles to management grades:-

- University Technical Colleges (UTCs)
- Apprentices
- Graduates
- Year in Industry Graduate Programme

b) *Emerging talent*


The objective of this strategy is to implement programmes which identify our emerging talent requirements and address our ageing workforce risks in order to fill key talent pipelines and core skill-set gaps. The key areas include:-

- Electrification & Plant (E&P) pipeline
- Identification of emerging talent for all key roles
- Section Manager development programme

c) Career Development


Our intention is to unlock, nurture and grow talent within all of our people to maximise engagement and productivity; to develop our future leaders. Activities to support this include:-

- Performance management
- Structured secondments / Projects / Rotational Programme
- LNW D&I strategy
- Higher Education / Professional Development
- Success criteria for critical roles
- Training Programmes – Leadership & competency management



Culture

- Continue with 'take 5 to care' campaign
- Broaden / expand existing LNW engagement plan
- Create a robust training plan to deliver increased performance & customer focus
- Continue with Better Every Day culture change programme



Organisational capability

- Broaden / expand existing early engagement strategy
- Expand LNW talent strategy to include retention of female employees
- Widen coaching & mentorship programme
- Support central activities in delivering Network Rail IR strategy



Organisational development

- Create an LNW attraction strategy
- Develop LNW reward & recognition strategy
- Broaden / expand existing transformation programme
- Embed strategic workforce planning

Governance will be by:-

- Talent Forums (levels 1-3)
- People Executive Review Meeting (held quarterly)
- Route Risk Review meetings (reviews held quarterly)
- Visualisation (levels 1-3 held weekly)
- Higher education panel – held once per annum

8.4 Social & environmental performance

Our CP6 Sustainability and Environment strategy includes training of our people, aligned to sustainability policy, with knowledge of environmental legal requirements and skill to resolve environmental issues.

Additionally the strategy includes the following programmes:-

1. Route waste management plan
2. Energy management
3. Water management
4. Drainage surveys for bulk storage sites
5. Fly-tipping management
6. Japanese Knotweed control programme

Our Safety, Sustainability and Environmental strategy requirements have been included in our maintenance and renewals plans, particularly with regards to our proposed Drainage & Off Track activities.

We continue to develop our social performance approach to support the communities we serve, whether it be through encouragement of volunteering, community rail initiatives or safety awareness campaigns, and to engage our staff in fund raising, spreading our safety message and helping Britain's development. Participation in these will be recognised by LNW Route awards such as the 'Backbone of Britain Recognition Scheme' and by other acknowledgements through LNW News, Connect and Press Releases.

8.5 Diversity & inclusion

Our overarching objectives for CP6 are:-



- Everyone building a more open, diverse & inclusive organisation
- Feeling included and cared for at work
- The workforce to be representative of the local community

A key output of the above is our ambition to improve the gender diversity of our workforce and raise the proportion of our workforce that are female to 20% by 2020. One of the contributors to this will be improving welfare facilities for our maintenance teams as described in Section 7.3 above.

In line with Network Rail's Everyone ABC strategy – Access & Inclusion, Behaviours and Benchmarks, and Collaboration, our three themes are:-

- Leadership, Communication & Direction
- Line Managers – responsibilities / legalities
- Processes & training

The strategy and the initiatives at Route level within this area will be reviewed on a regular basis at the LNW Diversity & Inclusion Steering Group and at our Route People Executive Review Meetings. Those within maintenance will be developed, reviewed and monitored by our Health, Safety and Wellbeing Programme Board as detailed in Section 7.3 above.

8.6 Quality

Over CP6, we will improve our asset management strategies and plans to bring them into line with relevant asset management quality standards. Our first priority will be to establish interactive Route Asset Management Plans (RAMPs) on SharpCloud and an effective management approach to derive and maintain stable workbanks to help realise our delivery efficiencies in CP6.

As described in Section 4.4, we will identify the areas of focus required to achieve ISO55000 compliance and develop an action plan to enable an optimising maturity on the ISO55001 scale during CP6.

We will also align our approach with the national initiatives proposed for CP6 in the following areas:-

- National Quality Strategy
- Integrated Management System
- Standards & Controls
- Assurance Framework
- Better Every Day

8.7 Information Technology

LNW Route will continue to use Route Services for the supply of IT infrastructure and services in CP6 and will align with the national IT strategy. The demand for IT is forecast to increase in CP6 as we adopt more Intelligent Infrastructure, analyse more data, and embrace mobile working practices. We will also develop our own local policies and procedures for the purchase, usage and management of IT equipment as appropriate to our needs. This will be with the aim of aligning technology, including mobile devices, to roles to ensure that people have the correct equipment for the role that they will undertake.

We will support Route Services in delivering their plans for us for CP6 which include:-

- **Business Led Schemes:** Specific schemes underpinning declared Route benefits and national change schemes in areas such as Predictive Maintenance, Whole System Modelling, Improved Delay Attribution and Ordering & Inventory.
- **Business Transformation:** providing the support and integration to business transformation programmes including Digital Railway, Enabling Better Asset Knowledge, Ellipse Exploitation and more, as they become defined.
- **Innovation:** Exploratory investment for risk/value from emerging technologies across cloud, big data, mobile, social & internet of things.
- **Strategic Change:** IT enablers to support NR strategy including application development, business intelligence, information governance, identity and access management, agile data centre, spatial data management, integration framework, operational technology bridge, cloud broker, information service management and next generation mobile.
- **Run, Renewals and Enhancements:** Running, upgrading technology, standardising, retiring and modernising IT for CP6 and CP7.



Passenger information displays at Birmingham New Street

9 Strategy for commercial focus – 3rd party cash funded contributions

The potential schemes in this section would require third party investment to proceed
No government funding is assumed to be available

9.1 Current and planned third party funding

LNW Route has a solid history of attracting third party funding for railway enhancements, based on strong relationships with regional / local government, local enterprise partnerships (LEPs) and other third party funders. In the first three years of CP5, £356m of third party enhancement funding was invested in the railway of LNW. Of this, £260m related to two large projects (Birmingham New Street Gateway and East West Rail Phase 1), with a further £96m related to a wider range of network and station enhancements.

However, the country is looking increasingly to the railways to support economic and housing growth – significant continued growth in passengers and freight is forecast over the next 25 years. The Shaw Report recommendations include the need to ‘explore new ways of paying for the growth in passengers and freight on the railway’. And ‘Routes should also be required and empowered to find local sources of funding and financing, including from those (such as local businesses or housing developers, for example) who stand to benefit from new or additional rail capacity’

Typical examples of current third party funded projects in CP5 include the following:-

Funder	Description
Merseytravel	Halton Curve infrastructure reinstatement and proposed new railway to Skelmersdale
	New station at Maghull North and upgrades at Newton-le-Willows and St Helens Junction
	New rolling stock for Merseyrail and associated infrastructure upgrades
Warrington BC	New station at Warrington West
Worcestershire CC & West Midlands CA	Bromsgrove station redevelopment
Coventry City Council	Coventry – Nuneaton line upgrade
	Coventry Station redevelopment
Wolverhampton City Council	Wolverhampton Station redevelopment
Transport for London	Metropolitan Line extension to Watford Junction
Cumbria County Council	Co-ordinating various 3 rd party investments on the Cumbrian Coast
Northern	Upgrade of Newton Heath, depots for new trains and station upgrades



Birmingham New Street Gateway

9.2 Capability and business development

To supplement the available central government (DfT Rail) funding, LNW has developed a business development strategy to attract increased levels of third party funding to invest in the railway - from business, developers and other parts of the public sector (for example local government, LEPs and new sub-national transport bodies). LNW Route has introduced a business development director to lead this strategy.

9.3 Future focus for third party involvement

Our vision for CP6 is to explore every opportunity to secure funding for projects to grow the railway. Our priorities will be to secure funding for rail enhancements to:

- Accommodate passenger and freight growth: this would include passenger capacity issues at stations, depots / stabling works and enabling longer or more trains.
- Support economic growth across the West Midlands and the North West
- Meet local needs identified by our partners and stakeholders

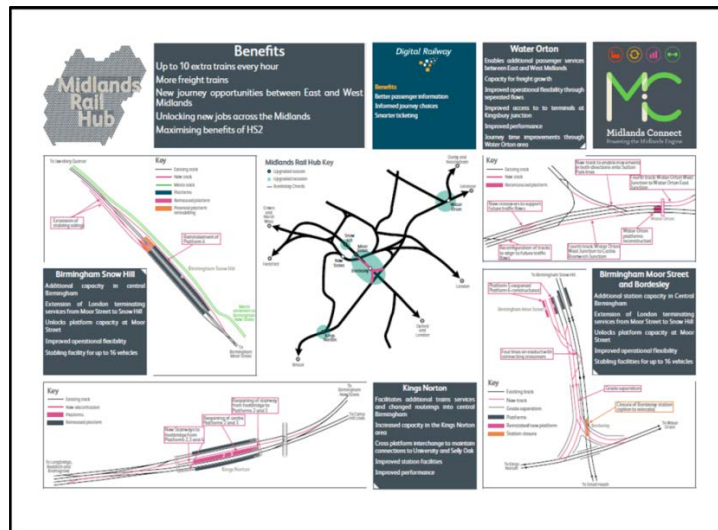
We intend to explore all potential opportunities for third party funding or financing, working with a wide range of bodies, including businesses, local authorities and sub-national transport bodies.

A key priority for LNW is strategic network enhancements, including East West Rail and works required to support the introduction of HS2, for instance the Crewe Hub. Through the Transport for the North and Midlands Connect partnerships Network Rail is working to support the transformation of the economy as part of the Northern Powerhouse and Midlands Engine (respectively). In particular, our system operator team is developing the Northern Powerhouse Rail and Midlands Rail Hub projects. Establishing the business case and funding mechanisms will be a priority.

Together with Cumbria County Council and the Cumbria LEP we are co-ordinating various 3rd party investments on the Cumbrian Coast associated with NuGen Moorside nuclear power station, Port of Workington and West Cumbria Mining.

In addition to the large strategic network enhancements set out above, the LNW Route will continue to develop a wide portfolio of projects with funders. Our initial assessment of the scale of this portfolio indicates there is considerable scope for other third party investment opportunities in LNW alone between now and the end of CP6.





Our strategy will incorporate the following six workstreams:-

1. Assisting Midlands Connect and TfN in developing new funding mechanisms for the critical large rail programmes affecting LNW, e.g. Midlands Rail Hub, TfN Strategic Transport Plan projects.
2. Working with the new combined authority mayors in the West Midlands, Liverpool City Region and Greater Manchester to develop new approaches to funding and delivering rail projects, especially at stations
3. Exploring and developing funding opportunities with local transport authorities, local planning authorities and local enterprise partnerships.
4. Working with DfT, franchise bidders and train operators to develop opportunities for accommodating growth, especially train lengthening and depots / stabling
5. Exploring opportunities for alternative funding, financing and delivery models for railway projects
6. Working through the new LNW land and accommodation strategy group, to progress line-of-route property strategies and development opportunities

The business development team already works closely with the System Operator and Route sponsorship teams to identify and secure third party funding opportunities, including a regular period meeting to review existing and future projects. The System Operator team, who will determine the strategic fit of all new projects, also manage the LNW Route Strategy Planning Group, at which new funding or project opportunities will be assessed.

Key risks to achievement of the LNW business development strategy include a number of strategic political risks with limited opportunity for Network Rail mitigation, for example sudden changes in UK Government priorities or the local / regional government structure. This reflects the nature of the complex organisational, political and funding context of transport and regional / local government. The lack of existing funding and funding mechanisms (e.g. for Combined Authorities and emerging sub-national transport bodies) is a significant risk. Accordingly, a key element of the business development strategy is to work with third parties to create innovative funding mechanisms to exploit planning gain / economic growth. Other risks relate to the ability of Network Rail and the wider rail industry to deliver the scale of ambition of funders across LNW. Full adoption of the Open for Business initiatives will be vital, especially that of contestability.

10 CP6 regulatory framework

This chapter sets out the funding implications of our plan for Control Period 6 (CP6), which runs from 1 April 2019 to 31 March 2024.

10.1. Expenditure forecast

Table 10.1, below, sets out our forecast of CP6 Route expenditure. It includes all costs that are directly incurred by us and those that are allocated / attributed to ourselves.

Table 10.1: CP6 forecast of Route expenditure

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Route expenditure							
Support	12	12	12	12	12	12	60
Operations	175	166	167	168	168	168	837
Maintenance	295	377	374	373	370	367	1,862
Renewals	369	420	481	593	557	474	2,525
Enhancements	743	0	0	0	0	0	0
Schedule 4 & 8	25	62	52	58	49	50	271
Allocated / attributed expenditure							
Traction electricity	82	92	98	99	101	102	492
Industry costs and rates	52	55	55	55	75	74	314
System Operator	0	13	14	15	14	13	68
Support and operations	94	120	128	121	124	123	615
Schedule 4 & 8	14	12	12	12	12	12	58
Renewals	194	141	158	156	122	98	675
Group Portfolio Fund	0	60	75	112	112	140	499
Non-SoFA expenditure							
BT Police costs	21	20	20	20	20	20	100
Financing costs	355	310	259	220	184	160	1,133
Corporation tax	1	15	64	61	45	73	258
Total expenditure	2,432	1,873	1,968	2,076	1,965	1,886	9,768

Maintenance expenditure increases from CP5 to CP6 primarily because of additional assets brought into maintenance due to Enhancements completed during late CP5 and increased planned cyclical activities on drainage and vegetation assets. Renewals expenditure increases are driven by increased volumes due to an ageing and increasing asset base (particularly in drainage and off track), the addition of the Crewe HS2 Integration Works renewals, and increasingly scarce access opportunities. Finally traction electricity costs increase in CP6 as the electrification schemes completed in CP5 become utilised by new fleets of electric trains.

10.2. Income forecast

The expenditure set out in Table 10.1 needs to be paid for. In Table 10.2, below, we provide a breakdown of the income that we expect to receive during CP6 from access charges, commercial income and grants from governments to cover the expenditure in our plan. Breakdowns of access charges and other single till income are provided in Appendix E.

Table 10.2: Total CP6 income

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Variable and station charges	(248)	(97)	(98)	(98)	(99)	(99)	(491)
EC4T	(78)	(89)	(96)	(97)	(98)	(99)	(479)
Schedule 4 ACS	(36)	(71)	(62)	(68)	(59)	(59)	(319)
FTAC / Network Grant (SOMR)	(739)	(886)	(964)	(1,086)	(1,042)	(969)	(4,946)
Grant for tax, financing and BTP	(376)	(345)	(343)	(302)	(249)	(253)	(1,491)
Income from FNPO	0	(278)	(297)	(318)	(311)	(297)	(1,499)
Other single till income	(137)	(108)	(109)	(108)	(108)	(110)	(542)
Subtotal (gross revenue requirement)	(1,615)	(1,873)	(1,968)	(2,076)	(1,965)	(1,886)	(9,768)
Capital grant for enhancements	(434)	0	0	0	0	0	0
Total income	(2,049)	(1,873)	(1,968)	(2,076)	(1,965)	(1,886)	(9,768)

Please note: Government grants for corporation tax, financing costs, BT Police costs and enhancements will be agreed outside of the periodic review but we have included them in our forecast of income for completeness.

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.

We have calculated the CP6 Route revenue requirement in Table 10.3, below, 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 regulated access charges, and government grants, in lieu of fixed charges in CP6. This presentation of CP6 funding also supports our calculation of the appropriate amount of fixed costs to recover through Fixed Track Access Charges (FTACs) paid by train operators.

Table 10.3: CP6 Route revenue requirement

£m in 2017/18 prices	19/20	20/21	21/22	22/23	23/24	CP6
Route support, operations and maintenance	555	553	553	550	547	2,759
Allocated support and operations	120	128	121	124	123	615
Traction electricity, industry costs and rates (including BTP)	167	174	175	195	197	907
Schedule 4 & 8	73	64	70	61	62	329
System Operator	13	14	15	14	13	68
Group Portfolio Fund	60	75	112	112	140	499
Allowed return	310	259	220	184	160	1,133
Amortisation	561	638	749	680	572	3,200
Tax	15	64	61	45	73	258
Gross revenue requirement	1,873	1,968	2,076	1,965	1,886	9,768
Other single till income	(108)	(109)	(108)	(108)	(110)	(542)
Income from FNPO route	(278)	(297)	(318)	(311)	(297)	(1,499)
Net revenue requirement	1,488	1,563	1,651	1,546	1,480	7,727

Please note: Following the creation of the Freight and National Passenger Operator (FNPO) route in April 2017, Network Rail's CP6 plan separately identifies the fully allocated costs of the FNPO route (i.e. including costs from central functions and geographic routes). In Table

10.3, above, we show the amount of income we expect our Route to receive from the FNPO Route. This 'Income from FNPO Route' is based on the share of our costs that are allocated to freight and national passenger operators on our Route. The allocation reflects where, and how much, freight and national passenger operators use our Route infrastructure.

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.

The overall Network Rail CP6 plan includes funding for risk and uncertainty (the 'Group Portfolio Fund'). Ideally, actual results will be in line with our CP6 plans and this funding will be gradually released to invest in improving the railway. In CP6, some of this funding will be held at Route-level, (see also Section 5.1 above) with the remainder held at a portfolio-level. All funding for risk and uncertainty has been allocated to Routes and the System Operator. Table 10.4, below, includes LNW Route's 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	(11,079)	(8,762)	(7,408)	(6,072)	(5,513)	(4,942)	(4,942)
Closing RAB	15,060	14,839	14,839	14,839	14,839	14,839	14,839
Average net debt / RAB	74%	59%	50%	41%	37%	33%	33%
Group Portfolio Fund		60	75	112	112	140	499
Route		26	26	26	26	26	130
Portfolio		34	49	86	86	114	369
Maturing debt		2,141	1,253	1,236	517	539	5,685
Working capital		(1)	(61)	(25)	(18)	(4)	(108)
Cash requirement (incl. working capital and external debt repayment)		1,926	2,147	2,103	1,966	2,103	10,245

11 Sign-off

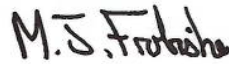
This document and accompanying templates are owned by the Route Managing Director LNW.

Submission of this document indicates confirmation that:

- all appropriate level 1 assurance activities have been undertaken;
- the RMD 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:-

Signed



Martin Frobisher
Route Managing Director

Date

19th Jan 2018.

Signed



James Dean
Director of Route Safety &
Asset Management

Date

19th JAN 2018.

Signed



Nicola Dean
Route Finance Director

Date

19th January 2018

Signed



Mark Killick
Chief Operating Officer

Date

19th January 2018

Signed



Andy Gent
Regional Director
Infrastructure Projects

Date

19/1/18

Appendix A Performance activity prioritisation by Route TOC

A1 – Chiltern Railways



These proposals are predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change

Train Performance		Route	Current	Lower	Expected	Upper	Achievability	Timeframe
Chiltern PPM		LNW	93.2%	92.88%	94.30%	95.71%	Amber	End CP6
Chiltern On-Time		LNW	68.5%	70.32%	71.40%	72.47%	Amber	End CP6
No.	Key constraints, risks and opportunities	What we plan to do					Owner	Timescale
1	Timetable planning	Embed joint planning practices established in CP5					COO	Start of CP6
2	Digital Railway Joint working	Chiltern Fleet and Infrastructure to be put forward for DR trials					COO	2021
3	LU Metropolitan line re-signalling	Engage with LUL to understand timescales and develop plans to mitigate impact					COO	tbc
4	Oxford Performance	Western and West Midlands COM to embed best practice and use of a cross Route TRC similar to Cross Country					COO	Start of CP6
5	Performance of other TOCs / Routes	Cross operator performance reviews to include Western Route. Regular 3 way meetings with Chiltern, LNW & Western					COO	Start of CP6
6	Fleet	Assist with further roll out of on train monitoring					COO	2022
7	Service Recovery	Joint Control work streams to be embedded					COO	2019
8	Route Crime & Suicides	Develop and implement a Joint Route Crime & Suicide Prevention Strategy with Chiltern Railways and BTP					COO	2018/19
9	Marylebone asset age and renewals	Formalise a 'golden 5 mile' renewal plan by the end of CP5 for delivery within CP6 to protect and renew ageing assets near Marylebone					DRS&AM, COO	Start of CP6
10	CP6 Metrics	Network Rail and Operators to shadow new metrics by the end of CP5 to fully understand impact both in terms of performance reporting and day to day operations.					COO	Start of CP6

A2 – West Midlands Trains



These proposals are predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change

Train Performance	Route	Current	Lower	Expected	Upper	Achievability	Timeframe
West Midlands PPM	LNW	88.6%	87.76%	89.10%	90.43%	Amber	End CP6
West Midlands On-Time	LNW	61.6	61.36%	62.30%	63.23%	Amber	End CP6
No	Key constraints, risks and opportunities	What we plan to do				Owner	Timescale
1	Impact of HS2 works – Euston Platforms 17&18, Curzon St, Hansacre Junction and Crewe Hub construction	Integrated planning with HS2 team & detailed performance mitigation planning				HS2SD	Throughout CP6
2	Vegetation management	Integrate RAM and DU work banks and sharing our plans. Work with our operators to identify priorities and wherever possible align our work banks accordingly.				COO, DRS&AM	End of CP5
3	Asset and infrastructure management including Track issues	Continued focus on infrastructure reliability and predict and prevent. Further roll out of on board monitoring equipment for rough rides and driver briefings				COO	2021
4	Refranchising & Committed Obligations	Unknown risk or opportunity at this time; we will work alongside the new franchise to understand and focus on delivery of their Committed Obligations				COO	2017
5	CP6 Metrics	NR and Operators to shadow new metrics by the end of CP5 to fully understand				COO	Start of CP6
6	Trespass & suicides	Develop and implement a Joint Route Crime & Suicide Prevention Strategy with West Midlands				COO	2019
7	Timetable and Access planning	Embed joint planning practices established in CP5 and work jointly to develop a timetable fit for purpose				COO	Start of CP6
8	Right Time delivery and Reduction in overall levels of Unexplained Delays	Develop a joint approach to improved investigation of unexplained delays and implementation of suitable improvement initiative				COO	TBC
9	CP6 Metrics	Network Rail and West Midlands Trains to shadow new metrics by the end of CP5 to fully understand impact both in terms of performance reporting and day to day operations				COO	Start of CP6
10	Final stage of Birmingham New Street resignalling	Work closely with the project team to minimise impact				COO	2021/22

A3 - Merseyrail



These proposals are predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change

Train Performance		Route	Current		Lower	Expected	Upper	Achievability	Timeframe
Merseyrail PPM		LNW	95.1%		94.16%	95.60%	97.03%	Amber	End CP6
Merseyrail On-Time		LNW	68.3%		68.45%	69.50%	70.54%	Amber	End CP6
No.	Key constraints, risks and opportunities	What we plan to do						Owner	Timescale
1	Autumn weather and effect on running a reliable railway	Enhanced MPH, RHTT planning and usage and better use of technology and de-vegetation work to reduce impact of autumn to Merseyrail						COO, DRS&AM	2020
2	Right Time delivery and Reduction in overall levels of Unexplained Delays including performance associated with the new Magull North station	Develop a joint approach to improved investigation of unexplained delays and implementation of suitable improvement initiatives						COO	TBC
3	Ongoing impact from external incidents - Trespass & suicides, Level Crossings and Major Events	Develop and implement a Joint Route Crime & Suicide Prevention Strategy with Merseyrail. Continue to develop our Level Crossing programme. Work on joint event management plans						COO	2019
4	Life expired fleet (Start of CP6) - New fleet to be introduced in CP6	Joint working practices to understand what impact the new fleet will have on infrastructure and any mitigations required including fleet/platform interface						COO	CP6
5	Asset and Infrastructure Management	Continued focus on infrastructure reliability and predict and prevent. Roll out of on-train monitoring solutions for Merseyrail new fleet						COO	2021
6	Digital Railway	Opportunity for Merseyrail to be potential pilot for ETCS Level 2 application on LNW Route						Digital Railway	Late CP6
7	TOC on Self performance	Assist with roll out of Lean working practices by Merseyrail						COO	Start of CP6
8	CP6 Metrics	NR and Operators to shadow new metrics by the end of CP5 to fully understand impact in terms of performance reporting and day to day operations						COO	Start of CP6
9	Continuation of the CP5 IR Issues	Position to be confirmed with Merseyrail						COO	TBC

A4 – Virgin West Coast



These proposals are predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change

Train Performance		Route	Current		Lower	Expected	Upper	Achievability	Timeframe
Virgin West Coast PPM		LNW	87.3%		84.31%	85.60%	86.88%	Amber	End CP6
Virgin West Coast On-Time		LNW	46.7%		47.57%	48.30%	49.02%	Amber	End CP6
No	Key constraints, risks and opportunities	What we plan to do						Owner	Timescale
1	Impact of HS2 works – Euston Platforms 17&18, Curzon St, Hansacre Junction and Crewe Hub construction	Integrated planning with HS2 team & detailed performance mitigation planning						HS2SD	Throughout CP6
2	Trespass & suicides	Further develop and implement a Joint Route Crime & Suicide Prevention strategy with Virgin trains and NR						COO	2019
3	Refranchising	Unknown risk or opportunity at this time however in due course we will work closely with the new franchise in order to understand and contribute to delivery of the Committed Obligations						COO	2018
4	Asset and infrastructure management including Track reliability (including bad bumps & tunnel strategy), Power Systems and OLE	Continued focus on infrastructure reliability and predict and prevent. Further roll out of on board monitoring equipment for rough rides and driver briefings						COO	2019
5	CP6 Metrics	Network Rail and Virgin to shadow new metrics by the end of CP5 to fully understand impact						COO	Start of CP6
6	Embankment / Third Party / Weather Risks	Understand and develop mitigations to external risks that will severely impact the operational running of the railway						COO, DRS&AM	End of CP5 – Start of CP6
7	Anglo Scot Route	Focus on improvement works started at the end of CP5 and enhance and develop further improvements throughout CP6						COO	Start of CP6
8	Fleet Issues–Interior refurbishment programme throughout CP6 – Potential loss trains	Overall programme will be planned to minimise risk but less trains available during times of disruption so needs to be considered during service recovery etc						COO	Start of CP6
9	Service Recovery	Virgin plan to undertake a review of their Command & Control Structure including Service Recovery protocols in advance of CP6.						COO	Start of CP6
10	Removal of Public Book Time	No current plans to resolve							
11	Final stage of Birmingham New Street resignalling	Work closely with the project team to minimise impact						COO	2021/22

A5 – Transpennine Express



These proposals are predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change

Train Performance		Route	Current		Lower	Expected	Upper	Achievability	Timeframe
Transpennine Express PPM		LNW	88.00%		87.66%	89.00%	90.33%	Amber	End of CP6
Transpennine Express On-Time		LNW	46.7%		46.29%	47.00%	47.70%	Amber	End of CP6
No	Key constraints, risks and opportunities	What we plan to do						Owner	Timescale
1	CP6 Metrics	NR and TPE to shadow new metrics by the end of CP5 to fully understand impact						COO	Start of CP6
2	Cross boundary management	Through the Alliance, further develop approach with LNE&EM Route to jointly manage performance issues						RMD, COO	
3	Transpennine Route Upgrade	We will work closely with the sponsors, project teams and timetable specialists to understand overall risk to performance and work alongside them to develop and remit suitable mitigation plans throughout development, construction and future timetable changes						LNE & LNW COO	Start of CP6
4	Ongoing impact associated with external incidents including Trespass and Fatalities	We will continue to develop our overall strategy around reducing the number of incidents and associated disruption caused by Route Crime. We will use best practise and innovation to tackle long standing and emerging issues and works						COO	2018
5	Anglo Scot Route	Focus on improvement works started at the end of CP5 and enhance and develop further improvements throughout CP6						COO	Start of CP6
6	CP5 Roll Over Issues – New Fleet and May18 Timetable Change inc. completion of the Great North Rail Project	Work has been ongoing throughout CP5 to review and implement necessary mitigations to ensure delivery of the significant infrastructure, timetable and fleet changes in line with May 2018. It will be essential to maintain focus as we move into CP6						COO	Ongoing
7	Franchise Committed Obligations	We will continue to work closely to ensure we focus jointly on delivering franchise committed obligations						RMD, COO	Ongoing
8	Right time railway and subthreshold delay - further improvements in how this is jointly measured and managed	Continued development of initiatives implemented during CP5. We will also look to introduce new technology to quickly identify the causes of delay real time. Consider Delay Reporting Apps being issued to drivers, conductors, station staff and signallers so that we can reduce the management time spent on explaining delay, secure faster, more reliable information directly from the frontline teams and improve our data quality and understanding of deviations from right time running and implement suitable improvements						RMD, COO	CP6
9	Asset and Infrastructure Management	Continued focus on infrastructure reliability and predict and prevent						DRS&AM, COO	CP6

A6 – Northern – See also LNE&EM CP6 Route Strategic Plan



These proposals are predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change

Train Performance		Route	Current	Lower	Expected	Upper	Achievability	Timeframe
Northern PPM (LNE Lead Route)		LNW/LNE	Targets As Per LNE&EM Plan					
Northern On-Time (LNE Lead Route)		LNW/LNE	Targets As Per LNE&EM Plan					
No	Key constraints, risks and opportunities	What we plan to do				Owner	Timescale	
1	CP6 Metrics	NR and Northern to shadow new metrics by the end of CP5 to fully understand impact				COO	Start of CP6	
2	Cross boundary management	Through the Alliance, further develop approach with LNE&EM Route to jointly manage performance issues				RMD, COO		
3	Transpennine Route Upgrade	We will work closely with the sponsors, project teams and timetable specialists to understand overall risk to performance and work alongside them to develop and remit suitable mitigation plans throughout development, construction and future timetable changes				LNW & LNE RMDs, COO	Start of CP6	
4	Ongoing impact associated with external incidents including Trespass and Fatalities	We will continue to develop our overall strategy around reducing the number of incidents and associated disruption caused by Route Crime. We will use best practise and innovation to tackle long standing and emerging issues and works				COO	2018	
5	CP5 Roll Over Issues – New Fleet inc. legacy issues and 319 Flex and May 18 Timetable Change, completion of the Great North Rail Project	Work has been ongoing throughout CP5 to review and implement necessary mitigations to ensure delivery of the significant infrastructure, timetable and fleet changes in line with May 2018. It will be essential to maintain focus as we move into CP6				COO	Ongoing	
6	Franchise Committed Obligations	We will continue to work closely to ensure we focus jointly on delivering franchise committed obligations				RMD, COO	Ongoing	
7	Right time railway and subthreshold delay - further improvements in how this is jointly measured and managed	Continued development of initiatives implemented during CP5. We will also look to introduce new technology to quickly identify the causes of delay real time. Consider Delay Reporting Apps being issued to drivers, conductors, station staff and signallers so that we can reduce the management time spent on explaining delay, secure faster, more reliable information directly from the frontline teams and improve our data quality and understanding of deviations from right time running and implement suitable improvements				RMD, COO	CP6	
8	Asset and Infrastructure Management	Continued focus on infrastructure reliability and predict and prevent				DRS&AM, COO	CP6	
9	Continuation of the CP5 IR Issues	Position to be confirmed with Northern				COO	TBC	

Appendix B - Key assumptions

Ref no.	Topic (e.g. access, deliverability, climate etc.)	Assumption	Areas of spend impacted (e.g. all opex, track renewals, all spend etc.)
1	Access	For this plan, we have assumed white periods remain broadly the same as CP5 but that securing disruptive access will become more challenging. Where additional services are then proposed by TOCs that reduce access, the impacts will be addressed on a case by case basis. Train Planning, Informed Traveller timescales and general timetabling approaches are assumed to stay as CP5	OPEX
2	Internal devolution	Further devolution of services from the Centre will be cost neutral	ALL
3	Route boundary changes	Route boundary changes in CP6 will be at no additional cost to LNW Route and that additional budget will accompany any boundary changes to cover the additional administration, organisational and other costs arising	ALL
4	Centrally provided services	Centre will continue providing services such as NMT etc to the same extent as provided in CP5	ALL
5	Telecoms	We have assumed that all telecoms operations, maintenance and renewal costs borne by NRT will continue to be centrally funded by NRT as in CP5 and have not included any provisions in our plans for CP6. We have included route telecoms maintenance costs as per our workforce and telecoms remains embedded within the Signalling Equivalent Unit rate and enhancement programmes as in CP5 and have not included any other provisions in our plans for CP6	ALL
6	Digital Railway	We have assumed that Digital Railway interventions will not occur on any LNW Route signalling assets in CP6 and have planned on the basis of conventional signalling interventions and ETCS-ready specifications where appropriate to sustain the signalling assets	Signalling
7	Organisation	We have planned on the basis of the current organisation structure and that recharging methodologies continue throughout the planning period	ALL
8	Railway industry devolution	We have assumed the railway industry remains as presently structured and have not included for any impacts of proposed station devolution to PTEs or similar	ALL

Ref no.	Topic (e.g. access, deliverability, climate etc.)	Assumption	Areas of spend impacted (e.g. all opex, track renewals, all spend etc.)
9	Deliverability	We have assumed that our renewals and maintenance activities will be deliverable within the context of HS2 works, supply chain capacity, possession access, and traffic growth	ALL
10	Weather	Our plan is dependent on there not being an increase in extreme weather events in CP6 compared to CP5 and that costs for work arising from extreme events will be funded from the Centre or be recoverable	ALL
11	Estimates	We have assumed that the supplied unit rates etc we have based our forecasts upon will be achievable	ALL
12	Enhancements	In developing our renewals and maintenance workbanks, enhancements have been treated as possible overlays and should any renewals schemes fall in the same geographic footprint, then we will integrate them into the enhancement and supply the equivalent financial contribution. This excludes Crewe where we have allocated a cash contribution of £270m within this plan	ALL
13	CP5 exit	Our plan assumes that the CP5 forecast volumes as of RF11 are achieved	ALL
14	HS2	We have assumed that HS2 will happen in CP6, the Euston mitigation measures will be adopted, and that the HS2 On Network Works will be funded by others. Our forecasts and risk profiles reflect our assessment of the resultant impact on our activities and operations	ALL
15	Refranchising	We have not included provisions for additional requirements arising from franchises to be re-let in CP6 (e.g. higher performance targets) as these are currently unknown	ALL
16	ESD programme	This will continue to be funded by the Centre in CP6 enabling the benefits of safer, faster isolations to be realised	ALL
17	Contract negotiations	Local market conditions and local construction inflation do not hinder renegotiation of contracts and aspired improvements to T&C's	Renewals
18	Land access costs	HS2 land access negotiations do not set unrealistic precedents for IP	Renewals

Appendix C - Route context

This appendix includes two tables. The first outlines the key challenges for LNW Route in CP6 as below, whilst the second overleaf highlights key risks to our forecast performance trajectories in Section 3 and their likely timing and duration.

Challenge	Description	Impacts
Increased utilisation of the network	Growth of usage of the rail network will continue in CP6 resulting in more trains operating, services running for longer hours (including 24 hour operation) and more passengers and freight being carried	<ul style="list-style-type: none"> • Increase of maintenance and renewal activity to sustain performance and availability • Additional infrastructure to maintain as more assets are added to the network • Reduction in access time for infrastructure works, necessitating changed work methodologies and organisation size • Increased risks at interface points e.g. level crossings, stations etc
HS2	During CP6, HS2 will be constructing their Phase 1 route from Euston to Birmingham and northwards to the WCML connection at Handsacre Junction, with a possible extension (Phase 2A) to Crewe	<ul style="list-style-type: none"> • Impact on capacity and performance during HS2 enabling works on the south end of the WCML, especially at Euston and Birmingham • Train paths and rolling stock required for HS2 tunnelling spoil removal from central London and the Chilterns • Significant infrastructure works required in CP6 to accommodate the HS2 services that will commence running over NR infrastructure north of Handsacre Junction in CP7 • Effect of HS2 activity on other LNW Route activities including supplier capacity, resource availability, staff retention etc
Deliverability	The scale of potential rail industry works in CP6 to accommodate growth, combined with HS2 reaching full delivery on Phase 1, will constrain the ability to deliver works	<ul style="list-style-type: none"> • Competition for scarce resources and equipment • Availability of access and impacts on rail services and local communities • Timescales for consents required
Network Rail Devolution	Further development of the Route's capability to manage devolved activities from Centre and to be accountable for Enhancements spend	<ul style="list-style-type: none"> • Definition of service provision by Centre to the Routes • Revised management and governance structures required at Route level • Business planning assumptions to be captured • Improve assurance approach following establishment of Route SRP
Regional Devolution	Greater influence on transport by devolved and local bodies such as Transport for the North, TfGM etc	<ul style="list-style-type: none"> • Rolling stock and service pattern changes driven locally • Potential changes to station management and maintenance • Northern Powerhouse proposals
Climate Change	Forecast and address impacts of changing weather patterns	<ul style="list-style-type: none"> • Contribute to Asset Policy updates using Route knowledge and experience • Complete mapping of drainage assets and assessments of adequacy • Update flood risk assessments and identify vulnerable structures/earthworks etc • Promote carbon reduction
Asset Information	Further improve knowledge of assets and understanding of sustainability issues	<ul style="list-style-type: none"> • Identification of remaining unknown assets, especially in Drainage and Off Track • Management of long term issues with electrification and signal structures • Improve data capture from maintenance to facilitate better planning and costing
Preparation for CP7	Adequacy of planning and development activities in CP6 to prepare for CP7	<ul style="list-style-type: none"> • Introduction of continuous business planning • Alignment of development of enhancement proposals with Periodic Review process

The table below highlights the key risks to our forecast performance trajectories in Section 3 and their likely timing and duration as follows:-

Key Performance Risks	CP5		CP6				CP7	Operator Impacted								
	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	Chiltern	Virgin West Coast	West Midlands	Merseyrail	TPE	Northern	Cross Country	Freight operators
HS2 works and mass haul traffic on and alongside LNW Route, Euston capacity restrictions, and relocation of Willesden HOOB, Euston DU and Saltley DU									✓	✓	✓					✓
HS2 development work - Platforms 17/18 at Euston										✓	✓					
Crewe Hub - CP6 Construction works										✓	✓			✓	✓	✓
New Fleet - Northern (End CP5) & TPE (end CP5/early CP6)													✓	✓		
New Fleet - Merseyrail from summer 2019 - late 2020 with a new timetable in 2021												✓				
Birmingham Resignalling										✓	✓				✓	
Ageing infrastructure and declining asset performance									✓	✓	✓	✓	✓	✓	✓	✓
May 2018 Timetable Change													✓	✓		
May 2019 Timetable Change										✓	✓				✓	✓
Dec 2019 Timetable Change - Major change for Chiltern									✓							
West Midlands Trains New Fleet - • New fleet 350/4 – on Euston – Crewe – Liv from Dec 19 • Cross city – new fleet (29 x 5 car) 2020/2021 • “Long distances services” – new fleet (5 x 16 car) 2020/21											✓					
West Midlands Trains - New Fleet and similar IR issues to other operators										✓	✓					
Completion of Northern Programmes & Dec 2019 Timetable Change									✓	✓	✓	✓	✓	✓		✓
Virgin Fleet Issues – Interior refurbishment programme throughout CP6 – Potential loss of trains										✓						
CP5 Roll Over Issues – New Fleet inc. Northern 319 Flex and May 18 Timetable Change inc.													✓	✓		
Ongoing impact associated with external incidents including trespass and fatalities									✓	✓	✓	✓	✓	✓	✓	✓
Transpennine Route Upgrade													✓	✓		✓
East West Rail - Western Phase 2									✓	✓	✓					✓

Appendix D - Scenario planning

Part (1): Tactical scenario planning for CP5

This section includes commentary on the impacts on CP5 of two different scenarios in CP5.

- Scenario 1: 20% increase in total remaining expenditure

Asset	Yr 4-5 outstanding spend	Potential investment increase	Benefits of increased expenditure			Comment on benefits
			Performance	Sustainability	Reputation	
Track	164	33	G+	G	G	Would permit reinstatement of removed CP5 volumes and continuity of work for our supply chain into CP6. Direct impact on achievement of performance
Signalling	206	41	G	G	A	Would permit reinstatement of removed CP5 volumes Ability to address other condition-led renewals
Structures	172	34	A	G	G	Would permit reinstatement of some removed CP5 volumes to undertake condition-led renewals
E&P	44	9	G+	G+	G	Would permit reinstatement of removed CP5 volumes to help improve asset reliability and lessen performance impact of aging assets in this key area
Earthworks	31	6	G	G+	G+	Would permit reinstatement of some removed CP5 volumes and allow more high risk sites to be addressed
Buildings	74	15	A	G	G+	Would permit reinstatement of some of the removed CP5 volumes and improve passenger experience
Drainage & Off Track	10	2	A	G+	A	Minimal impact as remaining budget so small
Totals	701	140				

Key to risk colours

A: no additional benefit

G: some additional benefit

G+: considerable additional benefit

- Scenario 2: 20% decrease in total remaining expenditure

Asset	Yr 4-5 outstanding spend	Maximum potential saving	Risk of curtailing expenditure			Comment on impacts/issues
			Performance	Sustainability	Reputation	
Track	164	33	R	R	R	Redundancies in supply chain, compensation of suppliers for reduced volume, and inability to ramp up volumes for CP6. Imposition of more condition of track TSRs and further aging of the asset, and further rework of CP6 proposals
Signalling	206	41	R	R	A	Inability to complete current signalling schemes and utilise booked disruptive access. Will cause cost escalation in CP6 to subsequently complete the works and necessitate rework of our already constrained CP6 proposals
Structures	172	34	A	R	A	Further aging of the asset and cancellation of already planned works with associated abortive costs. CP6 workbanks would need reworking to accommodate the deferrals
E&P	44	9	R	R	R	Further aging of an extremely fragile asset with consequent increase in failures impacting performance. Similar knock on effect into CP6 to above
Earthworks	31	6	A	R	R	Addition of further work to our deferrals register and inability to reduce train accident risk from high criticality sites.
Buildings	74	15	G	A	R	No immediate performance impact but less ability to address customer and statutory requirements. Subsequent impact on CP6 proposals
Drainage & Off Track	10	2	A	A	G	Minor impact
Totals	701	140				

Key to risk colours

G: no additional risk

A: some additional risk

R: considerable additional risk

Part 2: CP6 strategic investment options

Our core plan as described in Section 5 above is our primary objective for CP6 and it has been constrained to a nationally set total of £5,286m. Our detailed workbooks to fully realise our plans came to £2,361m and we have reduced our expenditure by omitting renewals activities that would not impact safety but reduce our ability to further improve sustainability in CP6. We would propose reinstating these renewals activities if feasible. In addition, during the development of our plans and with the benefit of feedback received to date from stakeholders both internal and external, we have identified further opportunities that we consider are worthwhile for further investigation should further funding or headroom (see Section 5.1) become available. These opportunities have not been assessed in detail at this stage and are presented for further discussion with stakeholders in due course. We believe these items offer the best opportunity to improve outputs in CP6 and comprise the following proposals:-

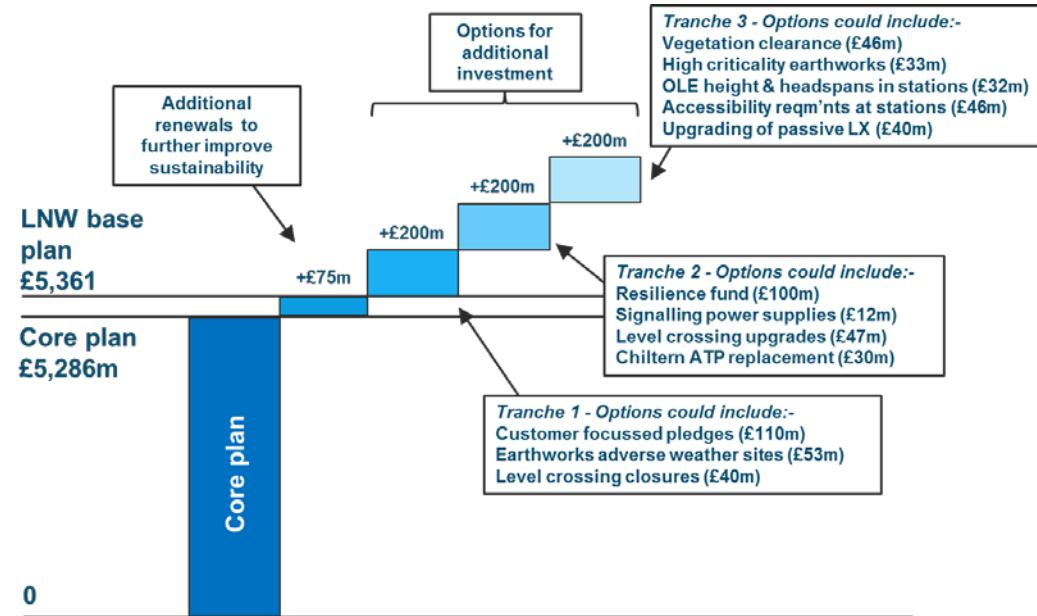
Category	Option	Proposed scale of additional investment (£m)	Primary benefits
Achievement of base plan expenditure of £5,361m	Additional renewals works omitted from our base plan to comply with nationally set targets	75	Improved sustainability
Weather resilience	Earthworks adverse weather sites	53	Schedule 8, safety
Performance and resilience	Customer Focussed Pledges	110	Reputation, performance
	Resilience fund	100	Performance
	Vegetation clearance	46	Performance, safety
	Signalling power supplies	15	Performance, Schedule 8
	Earthworks at high criticality locations	33	Schedule 8, safety
	Aston recontrol	5	Performance
	Additional communications for disruptive works	1.5	Reputation, performance
	Cumbrian Coast mining traffic	2	Performance, safety
Safety	Upgrading of passive level crossings	100	Safety
	Further closure of level crossings	40	Safety
	Upgrading of active level crossings	47	Safety
	Earthworks on minor lines	11	Performance, safety
	OLE headspans to portals in stations	14	Safety
Asset life cycle / obsolescence	Chiltern ATP replacement	30	Fleet maintenance
	Worcester Resignalling & Remodelling	112	Performance
	Bushey feeder station	20	Performance
Legislative compliance	Accessibility requirements at stations	46	Safety
	Working at height on buildings	42	Safety
	OLE Wire height at stations	18	Safety

Funding of these options would deliver the following overall benefits:-

- Realisation of further efficiencies within our base plan activity
- Greater stakeholder satisfaction
- Improved infrastructure reliability and sustainability
- Improved safety

Should additional funding or headroom become available, we include below our proposal to first reinstate renewals to further aid sustainability that we have excluded to work within the nationally set financial targets and then a suggested order of priority for tranches of further investment based upon step change increases of approximately £200m. At this stage, these have been based upon our current assessment and will be adjusted in subsequent consultation with stakeholders, as events unfold leading up to and in CP6, and as other funding opportunities become more apparent and definitive. Their incorporation into future proposals will be managed through annual updates of our Route Strategic Plan.

Proposed priority	Option
Achievement of base plan expenditure of £5,361m	Additional E&P, drainage and Off Track renewals
Tranche 1	Further closure of Level Crossings
	Customer Focussed Pledges
	Earthworks adverse weather sites
	Risk based asset renewals
	Additional communications
Tranche 2	Resilience fund
	Signalling power supplies
	Upgrading of active level crossings
	Chiltern ATP replacement
	Risk based asset renewals
Tranche 3	Vegetation clearance
	Earthworks at high criticality locations
	OLE headspans to portals in stations
	OLE Wire height at stations
	Accessibility requirements at stations
	Upgrading of passive level crossings
	Risk based asset renewals



Further details of the investment options are included below.

Description	Qualitative benefits	Quantitative benefits
<p><u>Additional renewals to improve sustainability (£75m)</u></p> <ul style="list-style-type: none"> Further investment in electrification, drainage and Off Track asset renewals to improve sustainability in and beyond CP6 Scope not included in core plan due to constrained targets being set 	<ul style="list-style-type: none"> Allows additional renewals to be undertaken in CP6 that presently cannot be accommodated within the national targets Ability to incorporate works into planned delivery mechanisms and deliver efficiently 	<ul style="list-style-type: none"> Addresses £20m of switchgear and power cable renewals that would otherwise be undertaken in CP7 £35m further investment in track drainage renewals that would otherwise be deferred to CP7 £20m additional renewals of Off Track assets other than fencing
<p><u>Earthworks adverse weather sites (£53m)</u></p> <ul style="list-style-type: none"> Remediation of adverse weather sites on four track primary routes rather than installing monitoring instrumentation as allowed for in our current plans These are sites where the consequence of any failure in terms of both the safety and performance risk is the greatest 	<ul style="list-style-type: none"> Would proactively address the highest risk sites in a planned manner rather than monitoring and having to respond once movement became unacceptable Ability to incorporate works into planned delivery mechanisms rather than becoming emergency works at high cost 	<ul style="list-style-type: none"> Addresses 85 sites Additional cost = £53m Reduces train accident risk arising from earthworks failures Improves track condition at embankment sites by addressing long term movements rather than monitoring and repacking track to maintain geometry
<p><u>Customer Focussed Pledges (£110m)</u></p> <ul style="list-style-type: none"> This option is proposed to enable us to respond quickly and collaboratively to customer requests that are not asset condition driven and cannot be funded through other avenues It would comprise a suitable, locally controlled fund to be able adapt infrastructure to changing traffic and operational needs without being subsumed into long term enhancement programmes which may ultimately not deliver 	<ul style="list-style-type: none"> Liaison with customers has revealed significant support for this option Builds on recent experience with our Chiltern Pledges where we focussed on removing all temporary speed restrictions (TSR), improved fault response and reduced the number of rough ride reports from train drivers Gives the ability to address known infrastructure pinchpoints or local bottlenecks such as short platforms at a single station preventing train lengthening or relocating a crossover to reduce the impact of recently introduced reversals 	<ul style="list-style-type: none"> Additional cost = £110m More resilient performance so PPM targets bettered by 0.5% Improve customer satisfaction levels by 2% Allow better alignment with customer objectives Allow better utilisation of assets to maximise service provisions without major enhancements Strengthen Route and Operator collaborative working Reduce likelihood of negative reputational impacts
<p><u>Resilience fund (£100m)</u></p> <ul style="list-style-type: none"> Additional maintenance and renewals activity over and above the base plan to address potential CP5 deferrals, legal compliance, gauge restoration, safety issues arising and impacts of further increases in traffic 	<ul style="list-style-type: none"> This recognises that our CP6 plans contain constrained renewals proposals that will result in increasing asset life and provides the ability to target expenditure on priority items using a risk based approach Provide ability to address impacts of increasing traffic levels including further reductions in available access due to services running for longer durations 	<ul style="list-style-type: none"> Additional cost = £100m Ability to address CP5 deferrals without impacting CP6 plans Improve legal compliance over above levels proposed in CP6 budgets
<p><u>Vegetation clearance (£46m)</u></p> <ul style="list-style-type: none"> We have included £25m in our CAPEX proposals to progress the removal of lineside vegetation to company standards This investment option would permit all remaining vegetation across the Route to be cleared to company standards by the end of CP6 	<ul style="list-style-type: none"> Improved visibility of signals for Operators reducing the likelihood of SPADs and misreading of signals Improved visibility for lookouts for staff working trackside Better visibility of other lineside assets to reduce slips and trips, and allow improved monitoring of asset condition 	<ul style="list-style-type: none"> Additional cost = £46m Reduced SPAD risk Reduced risk from falling trees and other vegetation issues Improved autumn performance and less requirement to introduce autumn timetables and undertake other seasonal measures (RHTT etc)

Description	Qualitative benefits	Quantitative benefits
<p><u>Signalling power supplies (£15m)</u></p> <ul style="list-style-type: none"> Provision of reconfigurable power supplies in CP6 signalling renewals schemes where the base specification currently excludes Reconfigurable power supplies allow power to be continued to be supplied to signalling assets should a fault develop by either automatically or manually adjusting the power supply configuration to bypass the fault 	<ul style="list-style-type: none"> Improves the resilience of signalling power supplies and enables faults to be accommodated without impacting the operation of signalling control systems Provides improved remote supervision and control of signalling power supplies Gives standardised approach for signalling renewal schemes compatible with other installations undertaken in CP3 & 4 	<ul style="list-style-type: none"> Additional cost = £15m Reduces risk and impacts of signalling power supply issues Reduces impacts on performance of signalling power supply issues Improves workforce safety by reducing urgency of faulting activities
<p><u>Earthworks at high criticality locations (£33m)</u></p> <ul style="list-style-type: none"> Undertake a number of deferred renewals schemes for embankments at 20 known high criticality locations to remove the risk of TSR and ESR imposition 	<ul style="list-style-type: none"> Would improve the asset condition at high criticality locations Ability to incorporate works into planned delivery mechanisms rather than having TSR/ESRs imposed and becoming urgent works at high cost This work would also have the benefit of improving the overall asset condition of the earthwork inventory 	<ul style="list-style-type: none"> Addresses 20 sites Additional cost = £33m Mitigates performance risk arising from these assets Reduce any potential Schedule 4 and 8 costs Reduce maintenance costs such as On Track Plant and Local Maintainer intervention to maintain track quality
<p><u>Aston recontrol (£5m)</u></p> <ul style="list-style-type: none"> Our CP6 signalling workbank includes a control system and interlocking hardware renewal at £15M. As it stands this is likely to see control of the cross city route to Lichfield remaining in Aston SB rather than relocate to WMSC where the rest of the West Midlands will be by 2021 when New Street Station is finally resignalled. This option would encompass the relocation of control of this area to the WMSC at Saltley 	<ul style="list-style-type: none"> Further concentration of signalling control in WMSC enabling better regulation and management of key Cross City services in Birmingham Opportunity for joint Control to have better oversight of Cross City service performance Greater service resilience and better incident response by removing communication interfaces between signallers and Control 	<ul style="list-style-type: none"> Additional cost = £5m OPEX savings from reduction in signaller headcount Reduction in signalling assets with the abolition of Aston Signal Box
<p><u>Cumbrian Coast mining traffic (£2m)</u></p> <ul style="list-style-type: none"> Additional maintenance to accommodate new traffic flows from West Cumbria Mining to Tyneside not included in CP6 maintenance plan 	<ul style="list-style-type: none"> New freight service potentially commencing at the start of CP6 with initially one train a day, rising to 6 trains a day by the end of the Control Period Will enable impacts of increased tonnage on jointed track and structures to be addressed 	<ul style="list-style-type: none"> Additional OPEX cost of £2m for CP6 Maintain line performance and safety as traffic increases
<p><u>Earthworks on minor lines (£11m)</u></p> <ul style="list-style-type: none"> Undertake large volumes of low value work on earthworks on rural and freight only routes on a "Line of Route" basis where traditionally it has been difficult to make a business case to undertake intervention works 	<ul style="list-style-type: none"> Would improve the asset condition on minor lines Ability to incorporate works into planned delivery mechanisms rather than becoming emergency works at high cost This work would also have the benefit of improving the overall asset condition of the earthwork inventory This would be complemented by work being undertaken on other assets such as Structures and Off-Track and Drainage in the same location in order to generate efficiencies 	<ul style="list-style-type: none"> 12 campaigns on minor lines Additional cost of £11m Opportunity to remove long standing constraints arising from condition of earthworks Reduces train accident risk arising from possible earthworks failures More stable expenditure forecasts as uncertainty of likelihood of emergency works reduced

Description	Qualitative benefits	Quantitative benefits
<p>Upgrading of passive level crossings (£100m)</p> <ul style="list-style-type: none"> Passive crossings, and especially user worked crossings, are some of the highest risk crossings on the network. This option would allow us to fit warning lights or other systems to those assessed as having the highest risk Conversion of one quarter of our passive level crossings to “active” to reduce the likelihood of human error with the aim of converting all passive crossings to active by the end of CP9. This comprises of circa 102 User Worked Crossings and 47 Footpath crossings 	<ul style="list-style-type: none"> Will provide warning of trains approaching high risk passive crossings where this is not reliably provided at present Improves reputation following recent high profile fatalities Provides ability to better comply with ORR Level Crossing Guidance 	<ul style="list-style-type: none"> Additional cost of £100m Reduction in FWI for the Route Reduction of risk at crossings addressed Improved public safety Reduction in operational incidents due to inadvertent misuse of crossings
<p>Further closure of level crossings (£40m)</p> <ul style="list-style-type: none"> Additional investment to fund further level crossing closures in CP6 	<ul style="list-style-type: none"> Improves reputation following recent high profile fatalities Provides ability to better comply with ORR Level Crossing Guidance 	<ul style="list-style-type: none"> Additional cost of £40m Reduction in FWI for the Route Removal of risk at crossings closed, improved public safety and reduced maintenance costs
<p>Upgrading of active level crossings (£47m)</p> <ul style="list-style-type: none"> Budget to provide various level crossing safety and performance enhancements such as; upgrading of Automatic Half Barrier (AHB) Crossings, provision of red light safety enforcement cameras, provision of video recording, power pack conversions, conversion of mechanical treadles, removal of obsolete reed remote control systems, level crossing development works 	<ul style="list-style-type: none"> Would allow investment in what is an increasing aging asset stock with obsolete equipment and escalating maintenance costs Additional cameras and video recordings would allow more prosecutions for misuse of crossings and further highlight the dangers of risky behaviour Modern initiatives can be applied to crossings that otherwise would not qualify for investment under policy guidelines 	<ul style="list-style-type: none"> Additional cost of £47m Reduces risk at AHB crossings if upgraded Reduced costs and failures by use of modern equipment Fewer performance affecting failures by the replacement of mechanical treadles
<p>OLE headspans to portals in stations (£14m)</p> <ul style="list-style-type: none"> Conversion of OLE headspans to portals with independent registration to reduce impact of dewirements 	<ul style="list-style-type: none"> Reduces the likelihood of and controls the impact of an OLE dewirement in publically accessible areas 	<ul style="list-style-type: none"> Additional cost of £14m Will provide a significant public safety risk reduction
<p>Chiltern ATP replacement (£30m)</p> <ul style="list-style-type: none"> Replacement of ATP loops with TPWS on the Chiltern lines as trainborne ATP now obsolete 	<ul style="list-style-type: none"> Key objective of one of our lead TOC's and would support their ATP cab equipment replacement strategy Removes non-standard equipment for which spares are increasingly difficult to source 	<ul style="list-style-type: none"> Additional cost of £30m Removes current risks of operating non-ATP fitted trains on the Chiltern lines Removes risks of non-availability of spares Reduces training requirements for maintenance and operator staff
<p>Additional Communications for Disruptive Works (£1.5m)</p> <ul style="list-style-type: none"> Additional digital, outdoor, radio, press, direct marketing etc advertising to communicate directly with train customers impacted by our renewals and upgrade work 	<ul style="list-style-type: none"> Ability to book space and plan campaigns to make them as effective as possible and reach customers in a timely manner Need for other stakeholders to see that we are working as hard as we can to communicate and advise customers 	<ul style="list-style-type: none"> Additional cost of £1.5m Reduces risk of over-crowding at affected stations if messages communicated early and increases likelihood of passenger management plans being effective

Description	Qualitative benefits	Quantitative benefits
<p>Worcester Resignalling & Remodelling (£111.5m)</p> <ul style="list-style-type: none"> Additional investment over and above life extension works included in Western Route plan for this area to resignal the 7 existing mechanical signal boxes and remodel the outdated track layout to suit modern traffic needs 	<ul style="list-style-type: none"> Signalling control to be transferred to WMSC to improve regulation and further concentration of signalling control in WMSC enabling better regulation and management of key services between Worcester and Birmingham Greater service resilience and better incident response by removing communication interfaces between signallers and Control 	<ul style="list-style-type: none"> Additional CAPEX of £111.5m over and above allowance in Western route CP6 plan OPEX savings from reduction in signaller headcount Reduction in signalling assets with the abolition of seven signal boxes Replacement of life expired track assets with modern equivalent form More capacity in the track layout to accommodate required service patterns
<p>Bushey feeder station (£20m)</p> <ul style="list-style-type: none"> Renewal of Bushey feeder station and associated neutral section deferred from CP5 	<ul style="list-style-type: none"> Removal of obsolete distribution equipment Provision of greater power supply capacity to accommodate more trains on the West Coast Main Line 	<ul style="list-style-type: none"> Additional cost of £20m Greater power supply resilience
<p>Accessibility requirements at stations (£46m)</p> <ul style="list-style-type: none"> Compliance with the Accessibility Requirements (PRM-TSI and Design standards for accessible railway stations: a code of practice by the Department for Transport and Transport Scotland – March 2015) 	<ul style="list-style-type: none"> Improves accessibility for passengers Positive reputational impact 	<ul style="list-style-type: none"> Additional cost of £46m Greater passenger satisfaction as measured in annual surveys
<p>Working at height on buildings (£42m)</p> <ul style="list-style-type: none"> Installation of safe systems of work on our buildings assets in compliance with the Working at Height Regulations 	<ul style="list-style-type: none"> Reduced expenditure on bespoke access and protection systems when undertaking maintenance and minor works on buildings 	<ul style="list-style-type: none"> Additional cost of £42m
<p>OLE Wire height at stations (£18m)</p> <ul style="list-style-type: none"> Addressing wire height at stations in accordance with GL/RT1210 	<ul style="list-style-type: none"> Opportunity to improve OLE assets at station platforms and reduce impacts on signal sighting 	<ul style="list-style-type: none"> Additional cost of £18m Achieves statutory requirement at all LNW stations

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

In Table E.1, we present our forecast of income from each regulated charge in CP6. Our charging income forecast reflects our latest forecast of CP6 traffic levels and is consistent with our total CP6 income forecast set out in Section 10.

As ORR has not yet concluded on the structure or level of CP6 charges, we assume the continuation of CP5 (2018/19) access charge rates. However, we have not included a forecast for the Capacity Charge because ORR has already concluded it will not continue in CP6.

Table E.1: Charging income

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Route charging income							
Variable Usage Charge	(66)	(49)	(50)	(51)	(51)	(51)	(253)
Electrification Asset Usage Charge	(5)	(5)	(5)	(5)	(5)	(5)	(27)
Schedule 4 Access Charge Supplement	(36)	(71)	(62)	(68)	(59)	(59)	(319)
FTAC / Grant (SOMR)	(1,115)	(886)	(964)	(1,086)	(1,042)	(969)	(4,946)
Station Long Term Charge	(52)	(42)	(42)	(42)	(42)	(42)	(211)
FNPO income	0	(278)	(297)	(318)	(311)	(297)	(1,499)
Charging income allocated to routes							
Electric Current for Traction	(78)	(89)	(96)	(97)	(98)	(99)	(479)
Total charging income	(1,351)	(1,421)	(1,517)	(1,667)	(1,608)	(1,523)	(7,735)

The information in table E.1 includes our view of additional traffic expected in CP6. Schedule 4 ACS is linked to the schedule 4 compensation required to meet the engineering possession regime for the renewals and maintenance workbanks. Electric current for traction increases in CP6 as

the electrification schemes completed in CP5 become utilised by new fleets of electric trains on the Route Table

E.2 provides a breakdown of forecast other single till income for CP6, which is included in Table 10.2 and 10.3, above. Other single till income represents Network Rail income that is received from sources other than access charges and network grants.

Table E.2: CP6 forecast of other single till income

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Route income							
Managed station QX	(22)	(22)	(22)	(22)	(22)	(22)	(110)
Franchised station lease income	(6)	(6)	(6)	(6)	(6)	(6)	(32)
Open access fixed contractual contribution	(0)	0	0	0	0	0	0
Depots	(13)	(13)	(13)	(13)	(13)	(13)	(64)
Finance charges (e.g. Crossrail)	0	0	0	0	0	0	0
Facility charges	(3)	(12)	(12)	(12)	(12)	(12)	(60)
Other route income	(12)	(1)	(1)	(1)	(1)	(1)	(3)
Income allocated to routes							
Property rental	(39)	(49)	(49)	(50)	(51)	(51)	(250)
Property sales	(41)	(5)	(5)	(4)	(4)	(5)	(23)
Total other single till income	(137)	(108)	(109)	(108)	(108)	(110)	(542)

Please note: We no longer include stations long term charge income, open access income (with the exception of the open access fixed contractual contribution) or freight income in other single till income.

Appendix F - Long term forecast

Asset	Condition trajectory	Comment
Track		<ul style="list-style-type: none"> • Our track plan focuses on maximising the life of the bearer, by targeting capex funds on rebalasting, repadding, milling and renewing rail. This combined with a move to risk based maintenance will enable the track asset to perform reliably in CP6 and have little impact on safety, as long as all the current standards and controls are managed compliantly • The impact of the constrained plan will only be realised in subsequent control periods, if funding levels are not increased to enable S&C renewals and wholesale track renewals to return to current levels in CP7 and beyond
Signalling		<ul style="list-style-type: none"> • Average condition (RAL) forecast to decrease from 14.7 years at end of CP5 to 12.9 years at end of CP6 (-12%) predominantly due to aging asset base in the North of the route. Increased resignalling unit rates in CP5 and projected CP6 rates have resulted in less assets being completely renewed than predicted at the start of CP5. CP6 has less full renewal volume and more life extension leading to the reduction in remaining asset life • Condition scores show a significant rising trend throughout CP7, CP8 and into CP9. This is largely due to forecast high volume renewals works required on the WCML (Preston, Warrington, Carlisle control areas) and other major routes. This presents a significant challenge going forward. We will look to work closely with the DR team and innovation to understand how novel DR solutions can help meet our future renewals demands

Asset	Condition trajectory	Comment
E&P		<ul style="list-style-type: none"> • Asset remaining life is consistent with the age profile of the asset base • Con Rail plan is consistent with a large bow wave of renewals due through CP6 and into CP7, which improves our baseline values on asset life, with a continued gradual decline through CP8-CP12 • Reduction in OLE asset life pays due regards to the current overall asset stock, not any future enhancements schemes to add new Electrification in CP7-CP12. If this does happen, asset condition may artificially improve, however the underlying Mk 1 asset life will continue to reduce. Mk1 equipment was used on the West Coast electrification between Euston, Birmingham, Manchester and Liverpool in the 1960's
Structures		<ul style="list-style-type: none"> • Maintaining the proportion of principal bridge elements below the basic safety limit will result in the current level of failures continuing in future control periods with the consequential impact on Route performance • Safety risk will be minimised through a focus on hazard reduction programmes and increasing used of structure monitoring. Operational restrictions will be required to mitigate safety risks associated with poor structure condition and capability

Asset	Condition trajectory	Comment
Drainage & Off Track	<ul style="list-style-type: none"> • The bow wave in CP5 reflects the re-prioritisation of funding from parent asset groups (Track, Geotech and Structures) to address the long term under-investment in drainage and off-track assets • Improvements in Asset knowledge in CP5 and years 1 and 2 of CP6 will permit a more robust evaluation of investment needs to improve drainage condition, as well as quantifying the currently unknown issues surrounding other off-track assets such as access points, safe walking routes, roads, incursions, crossings etc • Extrapolating on current asset knowledge the levels of Drainage expenditure proposed for CP6 will also be required in CP7 (c.£150M). From CP8 onwards, a reduction to steady state management would see levels around the £93M prediction currently shown for CP9 and beyond • In view of the current chronic underfunding for a very wide range of other Off-track assets and activities it is likely that steady state management of the very varied portfolio would need to see levels around the current £93M CP6 prediction for the foreseeable future • For all Drainage and Off-Track asset groups, maintenance expenditure will need to substantially increase above the current proposals in our CP6 plan as the asset information improves and activities transition to 'steady state' 	
Earthworks	<p>The graph shows two trajectories for earthwork outputs from the end of CP5 to CP12. The y-axis represents a condition metric from 1.0 to 2.5. The 'Earthwork ECS: baseline' (dashed line) shows a gradual increase from ~1.8 to ~2.05. The 'Earthworks ECS: constrained' (solid line) shows a steeper increase from ~1.8 to ~2.2.</p>	<ul style="list-style-type: none"> • Average Earthwork Condition will continue to deteriorate over the long term as assets that were constructed in the 1830s to 1890s approach the end of their design life • Overall asset risk will be managed as targeted interventions deal with those earthworks in the higher risk "D" and "E" categories whilst more assets move from the lower "A" and "B" categories into "C" as they begin to age • The rate of change shown in asset condition is based on a significant change at the end of CP6 which may not occur if sufficient funding is provided to allow more WLC interventions on non "D" and "E" assets

Asset	Condition trajectory	Comment																																													
Operational Property	<p>LNW Ops Property condition at end of control period</p> <table border="1"> <caption>Approximate data for LNW Ops Property condition</caption> <thead> <tr> <th>Control Period</th> <th>Weighted PARL: baseline (%)</th> <th>Weighted PARL: constrained (%)</th> <th>PARL < 20%: baseline (%)</th> <th>PARL < 20%: constrained (%)</th> </tr> </thead> <tbody> <tr> <td>End CP5</td> <td>55</td> <td>55</td> <td>38</td> <td>38</td> </tr> <tr> <td>CP6</td> <td>53</td> <td>53</td> <td>44</td> <td>44</td> </tr> <tr> <td>CP7</td> <td>53</td> <td>53</td> <td>42</td> <td>42</td> </tr> <tr> <td>CP8</td> <td>53</td> <td>53</td> <td>43</td> <td>43</td> </tr> <tr> <td>CP9</td> <td>53</td> <td>53</td> <td>44</td> <td>44</td> </tr> <tr> <td>CP10</td> <td>53</td> <td>53</td> <td>44</td> <td>44</td> </tr> <tr> <td>CP11</td> <td>53</td> <td>53</td> <td>44</td> <td>44</td> </tr> <tr> <td>CP12</td> <td>53</td> <td>53</td> <td>44</td> <td>44</td> </tr> </tbody> </table>	Control Period	Weighted PARL: baseline (%)	Weighted PARL: constrained (%)	PARL < 20%: baseline (%)	PARL < 20%: constrained (%)	End CP5	55	55	38	38	CP6	53	53	44	44	CP7	53	53	42	42	CP8	53	53	43	43	CP9	53	53	44	44	CP10	53	53	44	44	CP11	53	53	44	44	CP12	53	53	44	44	<ul style="list-style-type: none"> • Condition of the asset base remains fairly consistent over the next few control periods, but PARL as a measure is slow moving in nature and cannot recognise short term issues over a small area of the asset base • A number of factors cause concern within buildings including the mechanical and electrical assets located within them. These are interrelated and act cumulatively over an asset's life and, in some cases, may have been acting on an asset for many years. These factors include:- <ul style="list-style-type: none"> ○ Environmental factors ○ Operational environment – increased usage ○ Legacy factors – heritage assets ○ Capacity – overuse and undersized assets • All these, linked with the environment within which the building operates, combine to create complex relationships which affect the long-term asset life. However, overall condition could be maintained with local discrepancies which could affect customer relationships, passenger satisfaction and stakeholder interface issues within our own non-stations portfolio
Control Period	Weighted PARL: baseline (%)	Weighted PARL: constrained (%)	PARL < 20%: baseline (%)	PARL < 20%: constrained (%)																																											
End CP5	55	55	38	38																																											
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All	<p>LNW CSI at end of control period</p> <table border="1"> <caption>Approximate data for LNW CSI at end of control period</caption> <thead> <tr> <th>Control Period</th> <th>Baseline CSI (%)</th> <th>Constrained CSI (%)</th> </tr> </thead> <tbody> <tr> <td>End CP5</td> <td>0</td> <td>0</td> </tr> <tr> <td>CP6</td> <td>-3</td> <td>-3</td> </tr> <tr> <td>CP7</td> <td>-2</td> <td>-5</td> </tr> <tr> <td>CP8</td> <td>-1</td> <td>-6</td> </tr> <tr> <td>CP9</td> <td>-1</td> <td>-7</td> </tr> <tr> <td>CP10</td> <td>-3</td> <td>-8</td> </tr> <tr> <td>CP11</td> <td>-5</td> <td>-9</td> </tr> <tr> <td>CP12</td> <td>-8</td> <td>-12</td> </tr> </tbody> </table>	Control Period	Baseline CSI (%)	Constrained CSI (%)	End CP5	0	0	CP6	-3	-3	CP7	-2	-5	CP8	-1	-6	CP9	-1	-7	CP10	-3	-8	CP11	-5	-9	CP12	-8	-12	<ul style="list-style-type: none"> • The overall Composite Sustainability Index (CSI) shows a deterioration of -4.1% from Control Period 5 (CP5) exit to the end of Control Period 6 (CP6) • This projection for the CSI results in a less sustainable asset base than the Control Period 4 exit position when the net increase over CP5 is factored in at +0.1%. The overall effect on CSI in CP6 is due to the approach of refurbishment and life extension as opposed to comprehensive renewal of assets • The impact of the CP6 Capital Expenditure investment will continue to affect the CSI in subsequent control periods if funding levels are not increased to enable wholesale renewals in CP7 and beyond 																		
Control Period	Baseline CSI (%)	Constrained CSI (%)																																													
End CP5	0	0																																													
CP6	-3	-3																																													
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CP9	-1	-7																																													
CP10	-3	-8																																													
CP11	-5	-9																																													
CP12	-8	-12																																													

Appendix G - Stakeholder Feedback

This appendix contains a schedule of feedback received from stakeholders facilitated by a total of five CP6 Stakeholder Workshops held in February and June 2017. A further workshop has recently been held with representatives of our supply chain and feedback from that will be incorporated in the next update of this plan.

Attendees at the workshops were represented by the following organisations:-

a) Manchester / London in February 2017

Lead Train Operators	Other Train Operators	Freight Operators	Passenger Transport Executives	Funders	Industry Groups	Others
Merseyrail Transpennine Express Virgin West Coast London Midland Chiltern Railways	Cross Country Northern East Midlands Trains Alliance Rail Arriva Trains Wales Caledonian Sleepers Arriva Rail London Great Western Railway London Underground	DBCargo Freightliner Direct Rail Services	Transport for Greater Manchester Merseytravel	Department for Transport Transport for the North Rail North	Rail Delivery Group Transport Focus	ORR

b) Manchester / London / Birmingham in June 2017

County Councils	Unitary Authorities	Local Enterprise Partnerships	Passenger Transport Executives	Funders	Industry Groups
Cumbria Derbyshire Milton Keynes Lancashire Staffordshire Warwickshire	Blackburn with Darwin Blackpool Cheshire West & Chester Halton Telford & Wrekin Warrington	Black Country Cheshire and Warrington Hertfordshire Lancashire Northamptonshire Oxfordshire Stoke on Trent Worcestershire	Transport for West Midlands Midlands Connect	Department for Transport Transport for the North Rail North	Rail Delivery Group Transport Focus

Themes raised are detailed overleaf.

Issue	Description	How addressed in this plan	Applicable section
Asset condition	NR should be lobbying hard for sufficient funds to maintain asset condition and remain compliant to standards	Sustainability and asset management capability is a core objective	Sections 4.4 and 5.2.1.
Asset reliability	We do not want any more major incidents e.g. landslips. How will NR be protecting its assets? When assets fail we need to get it right quickly?	Sustainability and asset management capability is core objective. Asset strategies for CP6 outline our proposed approach	Sections 4.4 and 5.2.1
Capacity	Will capacity of existing infrastructure be maintained / improved post HS2 construction e.g. WCML? How do we prioritise and improve capacity for areas of high tourism e.g. Blackpool? Need to accommodate stabling for more trains	A summary of customer and capacity themed strategies to deliver our plan is given General stakeholder capacity requirements are included and how they link to route objectives. Our approach to Capacity & Growth is summarised but more detail will be found in the CP6 Enhancements Delivery plan when published HS2 Euston specific capacity issues are outlined. Some capacity schemes are included as investment options Train stabling improvements recognised as priority in commercial strategy section.	Section 6 Section 2 Section 6.2.3 Section 4.6 Appendix D Section 9.2
Collaboration	How can we jointly reduce industry costs? Efficiencies will come from us working closer together. We are all one team and will work together to lobby for decisions that we want How can interfaces with Network Rail Property function be made better? How do we ensure we have aligned incentives across the industry?	We fully endorse this and have described it in our plan as the 'One Team' approach in Section 1.1 above	Section 1.1
Contractors	Need to make NR work appealing to attract them away from HS2 etc. How do we lower the barriers to entry for others? Concern over capacity of signalling contractors to accommodate future workload including Digital Railway	Contractor resource issues and mitigating actions are covered in headwinds and efficiencies, and captured in the Risk section.	Section 7.7 Appendix G
Cross boundary	Co-ordinated approach needed to plan and prioritise interventions e.g. Birmingham – Bristol. How will cross boundary / interface issues will managed e.g. Northern portfolio of work across multiple routes	We fully endorse this and have described it in our plan as the 'One Team' approach in Section 1.1 above	Section 1.1
Customer focus	NR needs a more customer focussed culture and should map its plans back to customer business plans	Customer and stakeholder interests are at the heart of our plan	Sections 1.4 and 2

Issue	Description	How addressed in this plan	Applicable section
Devolution	Wary of parochial decision making. Decisions can affect the overall impacts for customers and freight. Definition of role of System Operator	Devolution covered within plan Role of System Operator is mentioned in future capacity and growth section and 3 rd party involvement sections. The System Operator Strategic Business Plan covers this issue in more detail	Section 6 Section 6.2 Section 9.2
Digital Railway	Confidence of delivery if funded separately to the CP6 plan. Options and system approach need clarifying e.g turnout speeds, adjust braking rates on trains remotely rather than have autumn timetables, TM, ETCS or what? What impact will it have on Route plans?	NRs approach to DR is outlined in the plan. Currently funded separately and no interventions included apart from where proposed as part of the Transpennine Route Upgrade.	Section 6.3
Disruption	How to keep people / freight moving when routes blocked? e.g. Project Rio. Concerns with HS2 construction and lack of understanding from disrupted passengers remote from the scheme Bus replacement is not a palatable option now, especially on West Coast. How will this be avoided?	Multiple references to disruption with mitigating actions within the constraints, risks and opportunities tables (including HS2 disruption).	Section 4.
Earthworks	Need to understand wider impacts not just those related to WCML but also the impacts on wider customers How do we know the proposed spend is sufficient?	Multiple references to earthworks within plan. Recognised as an unquantified risk which needs to be managed carefully.	Section 5.2.1
Enhancements	Need to build confidence in our plan to gain higher levels of 3 rd party funding to deliver enhancements. Need visibility of the plan. Also confidence of delivery e.g. NWEF and schemes deferred from CP4/CP5	Outline strategy is included within plan. Scheme deliverability is covered. 3 rd party funded schemes are covered in plan.	Section 6.2 Sections 7.4 and 7.5 Section 9
Freight	Insufficient content in plan regarding freight. How to accommodate 7 day operation? Freight always pushed back when resources are stretched and when disruption happens. Are we committed to EPS on West Coast? Can freight differentials be removed? How will FNPO (Freight and National Operators) work with the Routes?	Freight including consideration of FNPO is covered in plan	Section 6.7

Issue	Description	How addressed in this plan	Applicable section
Funding levels	Need NR to be funded sufficiently to deliver franchise commitments on services and performance. Need balanced funding levels according to geography e.g. South disproportionately higher than North? Route needs to have discretionary fund provision in CP6. Scotland does. Important such funding, if granted, sits with the route Prioritisation is key when funding is tight. Might be a wider national issue and not just LNW e.g. South East may take higher priority. We need to be able to set out the case, clearly, strongly and set out impacts	The plan sets out to secure the maximum funding possible for LNW Route. Our plan cannot answer questions that relate to the split of funding across Routes as this is a matter for the NR Board.	n/a
GRIP	Something fundamentally wrong as too slow especially during GRIP 3/4 which drives cost. Much quicker in highways	Our plan does not consider specifics around improvements to the GRIP process, however our deliverers have efficiency targets which include process improvements	n/a
HS2 construction	Diversionary capacity and capability. Logistics and capacity availability for removal of excavated material (12 million tonnes from London, 6 million tonnes in West Midlands)	Mass haul traffic captured as risk with subsequent plans to avoid. Also captured as a headwind with mitigating actions.	Section 4.5 Section 4.7 Section 7.7
HS2 services	Concern over impact of HS2 services over existing infrastructure e.g. to Manchester Piccadilly, Stockport, Crewe. Is there capacity? Will other train paths be removed to accommodate them?	Captured as a key route challenge. Further detail in the System Operator Strategic Business Plan.	Appendix C
Integrated access planning	Need to get better at this, especially when considering how enhancements will need to be overlaid on renewals. Churn rate is too high. Need early dialogue to establish suitable approaches. e.g. Bank Holidays versus possibility of Monday nights. 'Bubbles' approach is entirely the right thing to do. We like the pipeline approach but it needs to be joined up with renewals and be joined up with disruption.	We agree with this comment and are taking steps to address the concerns as described in Section 7.2. This will build upon the success of the HALO team on LNW South and expand its role to cover the entire Route and all activities including maintenance	Section 7.2
NRT	Will they have an SBP? What are their plans?	NRT will have their own CP6 Strategic Business Plan covering all Routes. An extract from their asset strategy for LNW is included	Section 5.2.1
Operators	Operators need to be clear on their requirements Increased focus on vegetation management is welcomed. Do not want to have to run autumn timetables. Need consistent standards for on train monitoring	Operator objectives are considered within constraints, risks and opportunities tables Cross route liaison with operators is included. An investment option for additional vegetation management is included in Appendix D. References to on train monitoring in locally driven customer measures section, and standards will be further developed in CP6	Section 4.6 Section 6.6 Appendix D Section 4.6 Appendix A

Issue	Description	How addressed in this plan	Applicable section
Performance & PPM	Need better visibility and granularity of performance figures. Can we start modelling and measuring the new performance metric now? We need to build confidence in our plan to maintain performance by targeted asset interventions whilst facing challenges of HS2 construction and increased passenger demand. RHTT failures have had major impact on Merseyrail and Northern	Performance targets are key objectives within the plan and included in the Route Objectives section A number of performance and resilience investment options are also included within Appendix D HS2 impact on performance is noted in Section 3	Section 3 Appendix D Section 3
PR18 and franchising	How do we ensure all workloads are aligned and not just in isolation. Seek assurance for franchising on WCML e.g. Runcorn/London service	Continue dialogue with ORR and DfT, but not specifically addressed within this plan	
Project delivery and performance	Need to understand impacts prior to delivery. Post-delivery, we need to capture whether promised outputs are delivered. Need earlier engagement on projects to align delivery proposals and outputs and focus on delivery on time and providing a functioning system. Having the associated timetable change earlier to unlock the benefits to operators	Deliverability is covered in detail within Section 7	Sections 7.4 and 7.5
Resource	How do we ensure we have enough resource to deliver with an increasing age profile across the industry? What about other specific resource issues e.g. timetable studies,	Resource issues and mitigating actions are covered in headwinds and efficiencies. Train planning resource issues are captured within Stakeholder Priorities with a statement of how this can be addressed. Also resources captured as risk.	Section 7.7 Section 2 Appendix G
Stakeholder representation	Will stakeholders have representation on LNW Route Exec?	Stakeholder interests are at the heart of our plan and we have already established a Supervisory Board for West Coast, and a Stations Alliance in the West Midlands. Other initiatives will be developed in CP6	Section 2

Appendix H - LNW Route Risks

H1 - Principle Asset Risks

Ref no.	Topic (e.g. access, deliverability, climate etc.)	Applicable assets	Description	Impacts
1	Unit rate uncertainty	All	Centrally derived E&P unit rates for CP6, generally uplifted from CP5, which have been widely deficient in comparison framework rates	Cost escalation
2	Deliverability / Contracting Strategy	All	We have experienced significant cost escalation in CP5 through a variety of factors which we are seeking to mitigate in CP6. However, there is a risk that these mitigations prove ineffective or unworkable in the overall industry and supply chain context	Deliverability and cost escalation
3	Sustainability	All	Long term sustainability of the asset will be affected by reduced renewals volumes in CP6	Sustainability
4	Completion of CP5 workbanks	All	Further CP5 slippage due to lack of delivery will impact ability to fund and deliver CP6 plan	CP6 outputs
5	Legislative compliance	All	Risk assessment work in CP6 may highlight issues with Legislative Compliance which cannot be funded	Displacement of other work items
6	Resource availability	All	Availability of critical contractor/consultant resource (inc HS2 impact) and also availability of disruptive track access to undertake the work	Deliverability
7	Fix on failure	All	Moving to a fix on failure approach will result in an unstable workbank requiring more reactive tactical management, supply chain uncertainty regarding workbank profile, less flexibility to accommodate emerging schemes and greater risk of the need for Temporary Speed Restrictions and Network Change applications	Performance
8	Constrained workbank	Buildings, Signalling, Off	Insufficient funding to complete and/ or comply with safety obligations	Safety

Ref no.	Topic (e.g. access, deliverability, climate etc.)	Applicable assets	Description	Impacts
		Track		
9	Asset information	Drainage, Off Track	As we address the adequacy of asset information and discover the condition of further unknown assets, it could result in requiring additional expenditure above that planned for CP6	
10	Constrained funding	Geotech	Inability to address all high risk sites leading to an increase in number of slope failures, more imposition of TSR/ESRs, and increased maintenance activity both on-track plant and manual labour	Safety, performance
11	Signal and OLE structures	Signalling, E&P	Insufficient funding to address this emerging issue in CP6	Safety, performance
12	Delivery	Track	Integrated national plans for delivery and resource may not be sustainable with reduced volumes, particularly High Output systems	Productivity
13	Maintenance	Track, OLE, Signalling & E&P	Maintenance ability to deliver the additional OPEX volume which will be required to maintain an aging asset base	Performance
14	Reliability	Track	Asset reliability, particularly S&C, will deteriorate particularly if we are unable to deliver the full planned S&C refurbishment volume	Safety, performance

H2 – Level 2 Risks

To date, the Level 2 risks relevant to LNW Route have been catalogued and assessed by completing a risk bow tie, which has identified the causes, consequences, mitigations, opportunities and threats. These are summarised in the table below.

LNW Route L2 Risks

Risk Title	Risk Description	Control / Mitigating Action	Reference to where action is covered	Proposed management actions in CP6
Safety - Workforce	There is a risk of failing to prevent fatalities or significant injuries to Network Rail employees resulting in loss of employee/union engagement	<ol style="list-style-type: none"> 1. Proactive management of risks through continuous improvement. Monitoring by SHE Exec and visualisation 2. Reactive management to improve processes such as accident investigation, audit and assurance activities 	ERR L2 Bow Tie	See Sections 3 and 4.1
Safety – Level crossings	There is a risk we fail to safely manage the infrastructure and interface with the public at level crossings, leading to potential collisions, significant train accident and/or injury/fatality	<ol style="list-style-type: none"> 1. Risk assessments and controls in place 2. Proactive identification of closure candidates or risk reduction opportunities 3. Information and instructions at crossings 4. User engagement – letters, awareness days, LX camera safety van 5. Competency arrangements for signallers 6. Fatigue monitoring of signallers 7. Safe operation of equipment 	ERR L2 Bow Tie	
Safety – Public at stations	There is a risk of failure to prevent fatalities or injuries to station users resulting in harm, financial compensation, enforcement action or damage to reputation	<ol style="list-style-type: none"> 1. BTP support and presence 2. Station information and management procedures 3. Inspection and maintenance regimes 4. Weather and incident response plans 5. Competence management and monitoring 6. Provision of equipment 7. Disability awareness and training 	ERR L2 Bow Tie	
Performance	There is a risk of not achieving the TOC regulatory targets for PPM MAA and CaSL MAA in CP6 for our lead TOCs resulting in loss of reputation and financial penalties	<ol style="list-style-type: none"> 1. Targeted and prioritised renewal plans 2. Competent renewals contractors appointed with robust NR supervision. Route also supported by internal Works Delivery organisation 3. Competent maintenance staff delivering maintenance in accordance with company standards 4. Compliance with and utilisation of long and short term timetable planning rules 	ERR L2 Bow Tie	See Sections 3, 4.2 and Appendix A

Risk Title	Risk Description	Control / Mitigating Action	Reference to where action is covered	Proposed management actions in CP6
HS2	There is a risk of an adverse impact on LNW key business objectives prior to and during the construction phases of HS2	<ol style="list-style-type: none"> 1. Influence HS2 governance structures to ensure LNW Route concerns are recognised and addressed 2. Establish integrated planning organisation to manage HS2 activities (HALO) 3. Undertake modelling of impacts on infrastructure to assess if changes to timetables are required 	ERR L2 Bow Tie (Also managed as a Level 1 risk corporately)	See Section 4.6
Earthworks	Failure of the earthworks asset leading to a major incident (e.g. collision, derailment)	<ol style="list-style-type: none"> 1. Earthworks examinations and evaluation 2. Extreme weather action plans 3. Drainage inspections and renewals 4. Operational procedures in the event of failures 5. Infrastructure design 	ERR L2 Bow Tie	See Sections 5.2.2 and 5.2.4
Cash Compliance	Overspending against the Route's cash envelope	<ol style="list-style-type: none"> 1. Regular business reviews 2. Application of finance regulations, policies and assurance – regularly reviewed and communicated to budget holders. 3. System controls supported by governance e.g. investment panel, claims panel, people panel. 4. Efficiencies programme which is owned, monitored and actioned. 5. Strategic business planning process and rolling forecast 	ERR L2 Bow Tie	See Section 4.5
Access and Logistics	The Route failing to support and deliver the committed work bank up to and inclusive of 2026	<ol style="list-style-type: none"> 1. Control processes such as Network Code, de-confliction (national), change control. 2. Engineering access planning 3. Industry Access Plan/ HALO 4. ADCCP and portfolio review group(internal governance structure) 	ERR L2 Bow Tie	See Section 7
Train Accident	A train accident due to a failure in the application of network rails processes and procedures.	<ol style="list-style-type: none"> 1. Asset specification 2. Maintenance and inspection procedures including signalling maintenance handbook/specification. 3. Plan delivery e.g. vegetation, seasonal 4. Railway group standards/operating procedures 5. Staff surveillance and assurance. 	ERR L2 Bow Tie	See Sections 5.2.2, 7 & 8

Risk Title	Risk Description	Control / Mitigating Action	Reference to where action is covered	Proposed management actions in CP6
Asset Renewals Volumes	LNW not delivering the remaining asset renewal volumes as defined at RF11A (year3) for the remainder of CP5 leading to asset failure or failure to meet regulatory targets resulting in accident, poor performance or reputational damage.	<ol style="list-style-type: none"> 1. Periodic sponsor reviews and challenge 2. Integrated planning e.g. HALO 3. Proactive delivery outside of high risk adverse weather season. 4. Route exec, financial governance process 	ERR L2 Bow Tie	See Section 4.4
Lineside Management	Adversely impacting the operational railway and lineside neighbours due to poor vegetation management on LNW and environs.	<ol style="list-style-type: none"> 1. Vegetation management strategy and inspection regime standards 2. Maximise Ellipse utilisation and/or review use of new software for vegetation data collection , with possible implementation 3. Tree surveys with appropriate mitigating actions for hazardous/3rd party trees 	ERR L2 Bow Tie	See Section 5.2.2
Route Sponsorship	There is a risk of failure to deliver the LNW CP5 regulated milestones as specified in the CP5 Enhancement Delivery Plan without significantly disrupting the operational railway	<ol style="list-style-type: none"> 1. Asset Delivery & Change Control Panel 2. Route Panel 3. Stage gate reviews 4. MBR/QBR 	ERR L2 Bow Tie	See Section 7.4
Resources	There is a risk of failure to maintain a suitable and sufficient workforce to deliver LNW Route objectives	<ol style="list-style-type: none"> 1. Emerging talent programme and succession planning 2. ROS Steering Group 3. LEAN methodology 4. Competency frameworks 5. People Exec 6. Self-assurance process 	ERR L2 Bow Tie	See Section 7
Business Continuity Management	There is a risk that failure to recover from a business interruption to pre-defined output levels and within identified timescales, resulting in an inability to run a train service, significant customer dissatisfaction, financial loss or reputational impact	<ol style="list-style-type: none"> 1. Succession plan for key posts 2. Business continuity programme 3. Business impact assessment of key areas 4. Asset management strategy 5. Route industrial action contingency plans 6. Communications strategy 	ERR L2 Bow Tie	See Section 5.3.3

Appendix I – Regulatory Floors

The methodology used to calculate the regulatory floors in Section 3 above is as follows:-

a) Consistent Route Measure – Performance (CRM-P)

Network Rail caused delay minutes per 100 train kilometres

Simple Definition

Annual minutes of Network Rail attributed delay to passenger trains from incidents occurring within the route boundary normalised by the actual mileage travelled by passenger trains within that route.

i.e. $(\text{Total attributed delay to the NR Route}) / (\text{train kms in the route}) * 100$ only including passenger trains

The figure quoted is the MAA (annual total) per 100 train kilometres quoted to 2 decimal places.

Definition Notes

- Delay Minutes – includes both primary and reactionary delay, and delay suffered in other routes from incidents occurring in your route. All attributed delay minutes are included
- Passenger trains – Only in service passenger train services are included (ie Empty Coaching Stock moves are not counted) the measure does though include delays to minor passenger operators such as NYMR, Tyne & Wear metro and London Underground.
- Actual mileage – The mileage is as calculated by PSS for in service passenger train movements within the route boundary. The mileage is based on actual rather than planned train movements. Mileage is measured in 100 train kilometres
- Cancellations – Full cancellations are excluded from the metric. Delay minutes and mileage of part cancelled trains are included in the measure.
- Disputed minutes – the measure should be assessed after all disputed minutes have been settled.

Assumptions

The trajectory is based on:-

- the DAG as of December 2017 – any significant shift in attribution practices will have a material impact on the metric.
- the current (minimal) level of attribution of sub-threshold delays any shift in attribution practices will have a material impact on the metric
- current route boundaries and definition of NR geography.
- the current balance of delay transfer between routes and the assumed level of traffic growth by each Operator in each Route.

CRM-P floor setting

The CRM-P floor has been set using a consistent, simple to understand, methodology across all routes to derive a floor which should only be breached when a route is displaying signs of being in systematic failure. The floor has been set on the basis that ORR will first investigate a breach of the floor and check whether the route is doing everything reasonably practicable to manage the relevant issues before taking regulatory action. This recognises that CRM-P can be impacted by extreme events outside the direct control of the railway (including weather) and potentially by major changes in the reliability of TOC operations. We are proposing that the floor for the route CRM-P is based on setting a “buffer” which becomes for that route a fixed absolute level of allowed deviation away from the proposed trajectory for each year in CP6.

The buffer is set at:-

- 30% of the Period 10 2017/18 value of CRM-P (MAA) for that route

So for instance, if the current CRM-P for a route is 4.00 minutes

The buffer for the route would be 1.2 minutes (i.e. 30% of 4 minutes)

If expected CRM-P in 2021/22 for the route is 3.80 minutes the floor would be set at 5.00 minutes (i.e. 1.2 minutes worse than the trajectory).

This logic keeps the proportional level of failure for all routes similar and follows the current methodology used by the DfT to set Breach levels around the TOC on Self Delay target within the franchise agreements. It does though recognise that confidence in delivery of improvement is slightly less than the confidence of delivering current performance. The 30% level is between the 25% used by the DfT in the South Western Railway franchise and the 40% proposed by the DfT for the South Eastern franchise. It also aligns to our proposal for the floor on the FDM-R measure for freight performance.

b) Freight Delivery Metric (FDM-R)

The regulatory floor has been calculated following the same methodology as used for the FDM-R target. Using a two year average of historical data the FDM-R methodology establishes, by Route, the number of allowed delay failures each Route should contribute in order to achieve the national FDM target of 94%. The regulatory floor calculation adds 30% to these allowed delay failures.

c) Network Sustainability

Whilst our proposals maximise sustainability with the mix of activities proposed, there are elements that could be deferred and remain deliverable in future control periods. The regulatory floor for sustainability is therefore set at this level which has been assessed to be limited to a 10% loss in proposed plan activity across the control period.

Routes will therefore be required to demonstrate that delivery is kept to a level to perform above the 90% threshold and demonstrate that forward plans will allow this to remain the case at the end of the control period.

In addition to the regulatory floor, Network Rail internal assurance and review will monitor route delivery through an annual route specific threshold. Where a single year's delivery falls to <85% of the plan a route specific improvement plan will be required for Executive approval & monitoring.

This measure of sustainability reflects a balance which, whilst allowing a certain amount of re-phasing, also requires a retained margin within the overall control period headroom, supporting remedy ahead of any regulatory breach.

Appendix J - Glossary of terms

Term	Definition
ADIP	Asset Data Improvement Programme (Network Rail)
ASLEF	Associated Society of Locomotive Engineers and Firemen
ASPRO	Asset Protection (works/team)
ATP	Automatic Train Protection
B&C	Buildings and Civils
BiDi	Bi-directional signalling
ASPRO	Asset Protection (works/team)
ATP	Automatic Train Protection
B&C	Buildings and Civils
BiDi	Bi-directional signalling
BVI	Basic Visual Inspection
CAPEX	Capital Expenditure
CaSL	Cancellations and Significant Lateness
CBI	Computer Based Interlocking
CCTV	Close Circuit TV system
CEFA	Civils Examination team
CIS	Customer Information System
COO	Chief Operating Officer
CP5	Control Period 5 (April 2014 – March 2019)
CP6	Control Period 6 (April 2019 - March 2024)
CP7	Control Period 7 (April 2024 – March 2029)

Term	Definition
CR	Chiltern Railways
CSAMS	Civils Strategic Asset Management System
CWR	Continuous Welded Rail
DC	Direct Current (3rd Rail Electrification System)
DCMS	Dept. for Digital, Culture, Media and Sport
DPI	Delay Per Incident (Network Rail performance measure)
DfT	Department for Transport
D&I	Diversity and Inclusion
DOO	Driver Only Operation
DR(P)	Digital Rail (Programme)
DRS&AM	Director of Route Safety and Asset Management
DU	Delivery Unit
E&P	Electrification and Plant
ESIP	Electrical Safety Improvement Programme
ESR(s)	Emergency Speed Restriction(s)
ETCS	European Train Control System
ERR	Enterprise Risk Reduction
EWAT	Extreme Weather Action Team
FDM	Freight Delivery Metric
FOC	Freight Operating Company
FNPO	Freight and National Passenger Operators Route

Term	Definition
FPM	Financial Performance Measure
FWI	Fatalities and Weighted Injuries (Index)
GNRP	Great Northern Rail Project
GRIP	Guide to Railway Investment Projects
HALO	HS2 Access and Logistics Organisation
HAVs	Hand and Arm Vibration
HLOS	High Level Output Statement
HoP&CRM	Head of Performance & Customer Relationship Manager
HoRSHE	Head of Route Safety Health and Environment
HS2	High Speed 2 (Organisation/programme)
HSRD	High Speed Rail Director
ICM	Infrastructure Cost Model
IECC	Integrated Electronic Control Centre
IP	Infrastructure Projects (Network Rail)
IR	Industrial Relations
IRJ	Insulated Rail Joint
LEAN	LEAN Continuous improvement process
LEP	Local Enterprise Partnership
LM	London Midland
LMD	Local Maintenance Depot
LMDSM	Local Maintenance Depot Stewardship Measure
LNE	London North Eastern Route
LNE&EM	London North Eastern and East Midlands Route
LTIFR	Lost Time Injury Frequency Rate
LTC	Long Term Charge
MDU	Maintenance Delivery Unit

Term	Definition
NWEP	North Western Electrification Programme
ORBIS	Offering Rail Better Information Systems (Network Rail)
OLE/OHLE	Overhead Line Equipment
OPEX	Operational Expenditure
ORR	Office of Rail Regulation
PA	Public Address system
PAN	Pantograph
PLPR	Plain Line Pattern Recognition (Network Rail Programme)
PMO	Project Management Organisation
PPM	Public Performance Measure
PSP	Principle Strategic Planner
PTE	Passenger Transport Executive
ONW	On Network Works (HS2 Interface works)
RAM	Route Asset Manager
RBM	Risk Based Maintenance (Network Rail Programme)
RHTT	Railhead Treatment Trains
R&D	Research and Development
RDD	Route Delivery Manager
RDG	Rail Delivery Group
RECS	Redevelopment of Euston Conventional Station
RHTT	Water tanks for autumn weather operations
RMD	Route Managing Director
RMT	Rail, Maritime and Transport Union
ROC	Railway Operational Code
RSSB	Railway Safety and Standards Board
RUP	Railway Upgrade Plan

