Route Business Scotland Route Strategic Plan

February 2018

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1. Foreword and summary

Foreword by Alex Hynes

Our vision for CP6 is that we are ***building the best railway Scotland has ever had***. Already more popular than at any time since the Victorian age, more than 96 million journeys are made every year on Scotland's railway, that's nearly twice the number a decade before. This popularity is expected to continue with passenger numbers forecast to double on many routes through our major stations. The rail industry is key to Scotland's economic success contributing up to £670m each year and employing more than 13,000 people. Network Rail alone employs nearly 3,000 people and engages over 160 suppliers.

At the same time as doing all this, we are delivering a great, punctual and reliable service every day for passenger and freight services both within Scotland and cross border – something we are not prepared to compromise. So we are protecting the resilience of the railway by investing in the infrastructure to address the weather challenges seen in recent years and to protect against ongoing extremes of weather. But, despite this success, there is always more that we can do. The untapped potential that exists is enormous and to build the best railway Scotland has ever had will take a complete transformation of what we do and how we do it.

Our new electric trains will offer more seats and faster journeys on many of our key routes, we will create a true inter-city network between our seven cities offering our customers a superb quality of service. The figures are remarkable. We will increase the number of carriages in our fleet by over 25%, that's an extra 20,000 seats to our customers every working day, and we will cut journey times and make travel hassle-free by rolling out queue busting smart ticketing right across the network. And we are continuing to upgrade our stations including new and extended platforms at Edinburgh Waverley and a £120m redevelopment of Glasgow Queen Street, creating a new landmark on Glasgow's cityscape.

But it's not just about passengers. Securing and retaining rail freight traffic in Scotland will be more challenging than anywhere else in the UK. The faster than anticipated decline in what was Scotland's bedrock for rail freight, coal, resulted in a reduction of over 40% of freight moved to, from and within Scotland. This has radically changed the face of rail freight in Scotland from a buoyant industry to one that will require a period of recovery and support to build up new and sustainable markets.

Through the ScotRail Alliance, we are working together as one railway in Scotland to improve performance for both our passenger and freight operators to get to run a service that fully deserves to be called the best railway that Scotland has ever had.

Alex Hynes
Managing Director, ScotRail Alliance

Building the best railway Scotland has ever had.

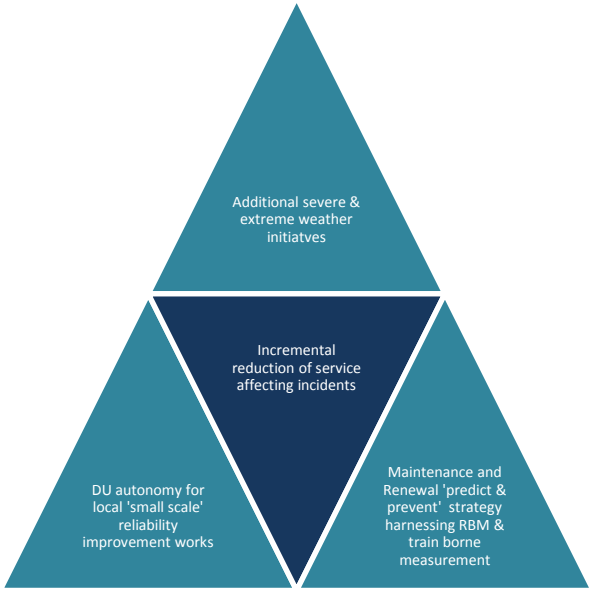
Scotland's railway is currently undergoing enormous change. The Borders Railway opening in 2015 has been a great success, demonstrating the power of rail to link communities and transform the economy. Right now, a new fleet of Class 385 faster, longer and greener trains is being built to operate on newly electrified lines between Edinburgh and Glasgow. This will mean more seats, more space and shorter journey times for travel between Scotland's two largest cities. This year we will see the arrival of newly refurbished HSTs, providing increased capacity and a transformed passenger experience for journeys between the Central Belt and Inverness and Aberdeen. The overall effect of this transformation of infrastructure and fleet is an increase in capacity by 2019 of 75% between Inverness and Aberdeen; 51% between Glasgow and Edinburgh; 66% between Aberdeen and the Central Belt; 43% between Inverness and the Central Belt, 33% in Borders and Fife, 11% in East Lothian and 7% in Strathclyde.

Delivering this transformation of passenger experience is not without its challenges - significant access has been required to deliver works between Edinburgh and Glasgow, and Aberdeen and Inverness, and much effort has been put in to minimising the effect of this on passengers. Meanwhile, we retain a focus on the core operation, maintenance and renewal of the network.

And this is a network that is one of the most diverse in the UK, combining high-speed cross-border routes, a dense suburban railway in the Central Belt, and rural routes running through the most isolated and exposed mountainous areas in the country. The nature of Scotland's location and geography creates a particular challenge from extreme weather, be that wind, snow or heavy rain, as seen in the damage caused by the extensive flooding of Storm Desmond and Storm Frank in winter 2015.

Looking forward to the next control period, CP6 (2019-2025), the railway in Scotland faces further challenge. Supporting the Scottish Government's priorities for economic growth and development is essential to provide a prosperous and sustainable future for Scotland. Scotland's Economic Strategy sets out the Scottish Government's plans to achieve a more productive, cohesive and fairer country and identifies that Scotland's railways are key to Scotland's prosperity and quality of life, sustaining links between our communities to employment opportunities, businesses, industries, markets, services and educational and social facilities. The industry has to demonstrate that it is making best use of the resources available to it, as well as developing its approach to reflect innovation, best practice and partnering with government and stakeholders to optimise the use and development of the system. The needs of passengers and freight shippers will be placed at the heart of the industry, building on the work already underway to better understand the needs of customers.

Following the publication of 'Scotland's rail infrastructure - The rail industry's advice for 2019 onwards' in February, Ministers published their High Level Output Specification in July 2017. We await the Capital Investment Strategy that will set out government's priorities for further investment in transport to deliver sustainable, affordable growth for Scotland's economy, and the finalisation of the statement of CP6 funding availability from Ministers.



In terms of the core operation, maintenance and renewal (O, M&R) of the network in CP6, this plan reflects our understanding of where we will be on our transformation journey by the end of CP5, in terms of rolling stock in place, infrastructure renewed and enhanced, and performance and other outputs expected, and it supports our vision of creating the best railway Scotland has ever had. In order to achieve this vision, our railway will need to be increasingly reliable, and we have built an O,M&R plan to deliver this, supported by three key pillars:

1. We aim to invest more to provide increased physical resilience to extreme weather events, to reduce the impact on passengers and freight shippers of disruption as experienced in CP5. This resilience will be delivered through enhanced lineside maintenance interventions and targeted renewals, and is aimed at both reducing incidents of line closures and restrictions, as well as reducing recovery time when operations have to be restricted in the most extreme events.

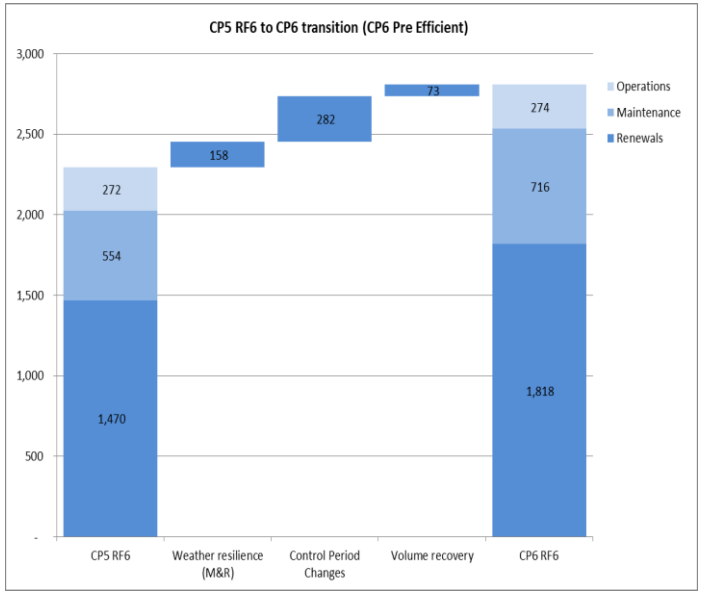
2. A data-driven maintenance and renewal plan based on 'predict & prevent' - utilising remote condition monitoring, risk-based maintenance, train-borne measurement and other technologies to drive the correct intervention at the correct time, to prevent unplanned disruption to our passengers and freight users.

Taken together, the pre-efficient cost forecasts in this plan for O,M&R in CP6 are 22% higher than in CP5, and this reflects three primary drivers:

1. The aim to invest more to provide increased physical resilience to extreme weather events (7%).
2. The age profile and condition of some of the assets we manage differs between control periods, and CP6 requires relatively higher spend in our core electrification, buildings and signalling assets to maintain reliability and safety. Additionally, our plan reflects the need to maintain the increasing electrification asset base, and support the increase in passenger services (12%).
3. In our most recent (Sept 17) reforecast we have included a catch-up of renewal volumes in CP5, but there remains some work requiring further catch-up in CP6 (3%).

In costing our plan, we have recognised areas where Network Rail's costs will increase in CP6 ('headwinds') as well as efficiency opportunities. The net effect of these is to reduce our post-efficient costs by 5%, or 16% higher than CP5.

We have constructed our plan on the basis of cost assumptions shared with the Office of Rail and Road, and Transport Scotland, and consistent with the Statement of Funds Available published by Scottish Government on 25/01/18. Delivery of the proposed volumes, and the outputs targeted by this plan, are conditional upon the broader assumptions listed in Appendix B.



The following notes are included to aid interpretation of the detail in this document:

Risk charts

Risk scores included in this document are based on the Corporate Risk Assessment Matrix (v1.2).

In all risk charts, NET risk score is based on our forecast CP5 exit position, while the TARGET score is forecast CP6 exit position, on the basis that the plan contained in this submission is implemented.

In all risk charts, risk scores are given as whole numbers, where these scores are the same, the indicators are shown as offset in the same box, but no inference should be taken of any difference in risk score. Risks in the strategic plan exists with one of the Routes ERRs (or is similar) or on a local risk log.

Costing

Unless otherwise stated, where costs are given, these are estimates in a 17/18 price base.

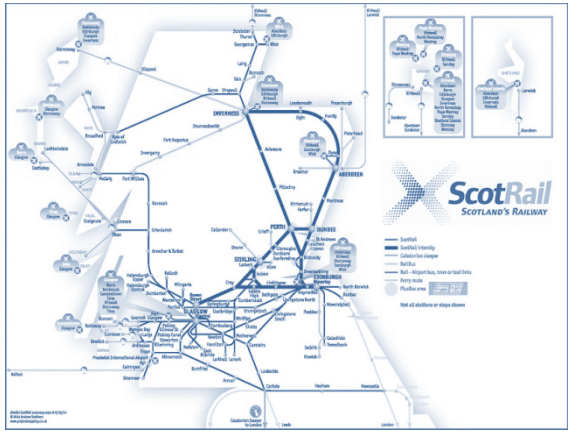
Document development

This strategic plan is the February 2018 update of our progress in developing long-term plans through CP5 and CP6. Long-term planning is a continuous process and this will continue to develop prior to the start of CP6 and beyond. This plan is an evolution of our December 2017 Route Strategic Plan. The key recent developments that have been made are:

- Further development of our maintenance and renewal volume plans including phasing
- Development of headwinds and efficiencies; notably we have rationalised headwind categories from those used in earlier versions of the plan.
- Further development of our CP6 route scorecard, aligning metrics across route and FNPO scorecards.
- Development of safety, reliability and performance plans.
- Improving alignment between route and central activities planned for CP6.

Key areas of focus going forward are:

- Delivery of current performance improvement plans to achieve end-CP5 targets.
- Delivery of our current enhancement programme, and supporting the introduction of new rolling stock to the route.
- Mobilisation for CP6, including implementation of commercial strategies and maintenance delivery strategy including targeted recruitment of offtrack and OLE-staff to support the plan.
- Further integration of delivery programmes for forecast CP6 renewal and enhancement programmes to maximise efficiency and deliverability.
- Development of plans to address requirements of the Scottish HLOS (see Appendix J)



2. Stakeholder priorities

Who the stakeholders are

The industry's key stakeholders in determining future options are: passengers, Scottish Ministers and Transport Scotland who specify and fund the network in Scotland, passenger operators, including: Abellio ScotRail, Virgin East Coast, Virgin West Coast, Trans Pennine Express, Caledonian Sleeper, Cross Country, Charter operators and Freight operators. The UK Government, HS2 Ltd, ORR and representative groups are also involved in strategic development of priorities that feed through to the Scottish HLOS and PR18 process.

As we develop our delivery strategy, we will increasingly work with delivery partners, as well as the supply chain, to seek early involvement in the development and costing of projects, as well as assessing deliverability and integrating the programmes of work to maximise efficient delivery.

How the stakeholders have been/are engaged with

Stakeholders are engaged through the quarterly Route Investment Review Group (RIRG) to identify investment oppourtunities and funding priorities, and through the process that led to the establishment of the Scotland Route Study in summer 2016. The Rail Delivery Group's Scottish Strategic Planning Group feeds wider industry priorities into the process, and it led the development of '*Investing in the Future'*.

In addition to the regular core RIRG meetings, specific CP6 stakeholder workshops were undertaken in February and September 2017 to share the developing O, M&R plan. These were cross-industry events involving Transport Scotland, ORR, Transport Focus and Freight and Passenger operators. More detailed sessions have also been held with Transport Scotland and ORR. Further workshops will take place with the supply chain prior to the SBP publication.

Stakeholder priorities

Passenger: passenger priorities are illustrated in the following graphic overleaf, taken from the most recent (November 2017) Transport Focus study in to rail passenger's priorities in Scotland. Additionally we are mindful of the need to consider the barriers to modal change from those who are not currently train passengers. These include connectivity with other forms of transport and a competitive journey time.

The National Rail Passenger Survey (NRPS), delivered by Transport Focus, is used to produce a Scotland wide picture of passengers' satisfaction with rail travel (for this route it is based on ScotRail services) and over a third of the results relates to their experience at stations. The route is developing masterplans for the two managed stations within Scotland, Glasgow Central and Waverley and any significant developments within these two stations during CP6 may have a short term impact on the NRPS scores.

Scottish Government: The Scottish Government published its High Level Output Statement (HLOS) for Control Period 6 in July 2017 setting out its key requirements for CP6. These align with Scottish Government's Strategic Priorities for Rail, which are:

- improved services – faster journey times, strengthened commuter services and effective connections between cities and regions

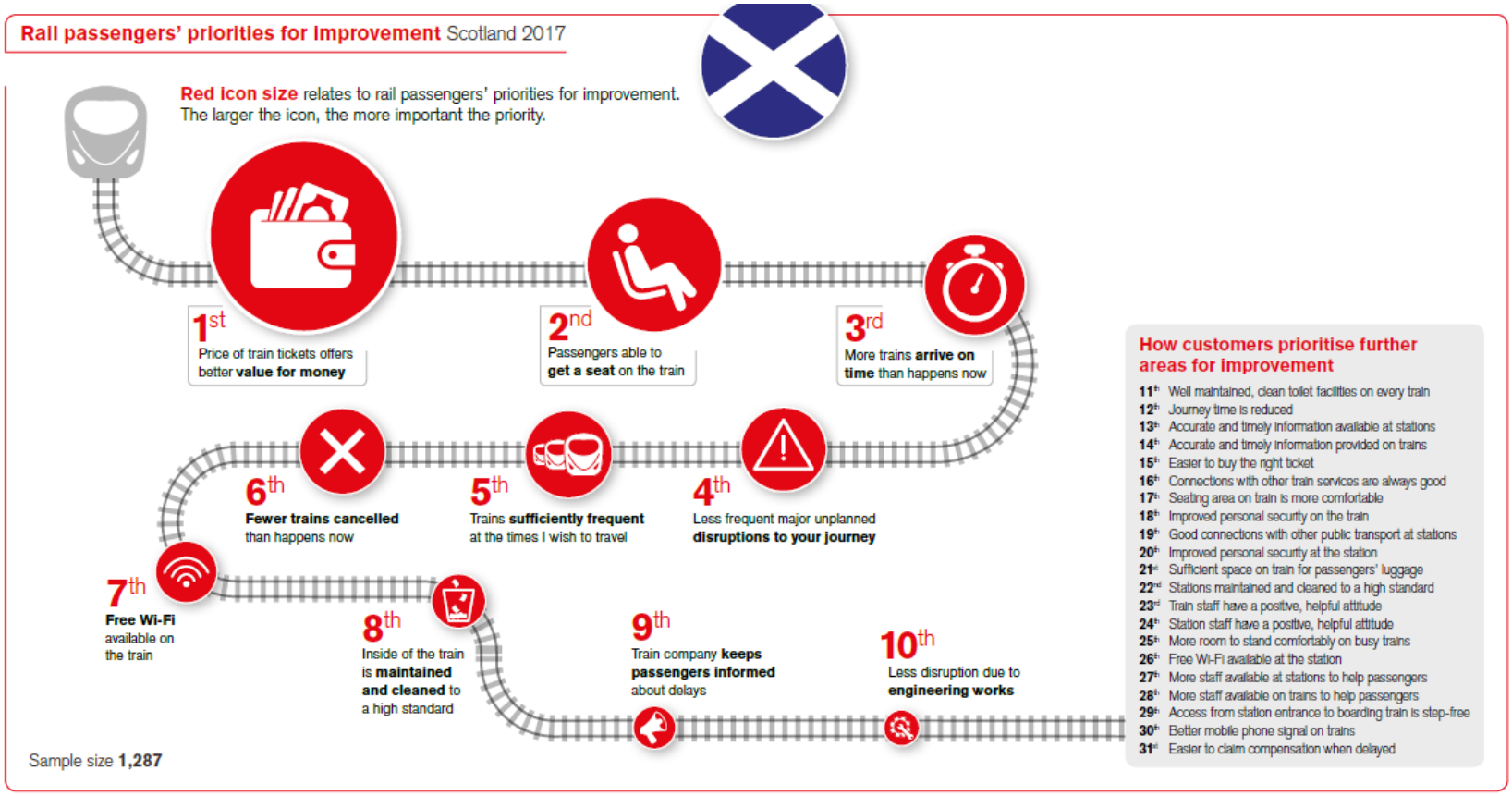
- improved capacity – optimum utilisation of network and on-train capacity through high levels of performance

- improved value - efficiency and value for money, for the taxpayer and the fare-payer and the rail freight customer

- more effective integration - between rail operators and rail infrastructure management, and between rail and other transport modes

- increasing inclusive economic growth

Alignment of this plan with the requirements of the HLOS is illustrated in Appendix J.



Passenger and Freight Operators: Passenger and freight operator priorities (as recorded in the 2017 stakeholder workshop) are illustrated in the table below:

Stakeholder	Key priorities for CP6
Abellio ScotRail	Maximising passenger growth to exploit capacity provided by new fleet and infrastructure in CP5. Aligning Network Rail and Abellio ScotRail's regulatory and franchise targets for CP6. Improving right time performance, as well as PPM.
Caledonian Sleeper	Minimising impact on existing services of the introduction of the new fleet of sleeper coaches in 2018 as well as the impact of the HS2 works at Euston. Working with NR to minimise impact on sleeper services of Bank holiday possessions. Delivering the Right Time arrival at Destination target of 80% for 18/19 and to the end of the franchise. Development of options for early boarding at managed stations as well as developing new markets and dedicated Lounges at key stations. These are key aspects of the Caledonian Sleeper business plan.
Virgin Trains West Coast	As a minimum sustaining, but ideally improving train performance (London to Glasgow PPM MAA currently c.85%) Achieving journey time reductions to support modal shift from air – aspiration is a 4hr15min journey (average today is 4hr 27mins), for example through more use of enhanced permissible speeds. Management of enhancements and renewals to minimise impact on cross-border traffic.
Virgin Trains East Coast	Journey time improvements into Edinburgh Waverley. Operating additional services once rolling stock available Taking advantage of new electrification north of Edinburgh.
Cross Country Trains	Performance resilience improvements between Edinburgh and Berwick. Drem to Edinburgh constraints: Portobello Junction: Abbeyhill Junction: would support schemes to reduce the level of constraint risk at these locations Edinburgh to Glasgow: Journey times are important for passenger flows on cross border services, would support schemes which enable improved journey times.
TransPennine Express	Improved journey times from the border to Edinburgh and Glasgow (Carstairs flexibility and the interaction with other operators seen as a block to this currently). Introduction of new trains to improve capacity, and platform capacity at terminal stations to support these. Spreading access for renewals and enhancement works through the control period to minimise peaks of disruption.
DB Cargo	Reliability and resilience of existing network, avoiding closures such as Lamington (where scour damage caused the WCML to be closed for seven weeks in 2016). Gauge clearance for diversionary routes. Swifter response to new business proposals.
Direct Rail Services	Protecting existing capacity for freight. Improving freight JTs, available capacity (train length) and route availability (e.g. reducing restrictions for Cl66 locos). Addressing competition with newly dualled A9 route and Highland Mainline.
West Coast Railways	The Jacobite and ensuring its long-term future, in its present form. Borders steam, which had a successful short season in 2017. Reasonable pathing for charter on rural scenic routes (WH, Kyle particularly).

How stakeholder needs have been prioritised

As described in earlier sections, many short-term passenger needs will be addressed through enhancements to rolling stock and infrastructure that are taking place now and over the next 18 months. For example, the conclusion of the key output one works on the Edinburgh to Glasgow route and introduction of new electric trains will increase available seats to passengers, provide a high quality on-train environment, improved WiFi and will reduce the disruption experienced on the route through engineering works.

Looking further ahead, many stakeholder longer-term needs and aspirations require enhancement to the network and have been identified through the Route Study process, and work with Transport Scotland is ongoing to build on the outcomes and develop priorities for investment and co-ordination with other industry activities, for example around opportunities aligned to rolling stock and franchise choices. These are being progressed on a continuous basis to promote better planning and alignment with long-term government strategic outcomes, reflecting the availability of funding and the maturity of projects.

Within the core OM&R plan, stakeholder concerns around weather resilience have been recognised, as well as the wider need for a continually high performing railway to support passenger growth. Longer-term passenger and freight capability aspirations have been recognised and incremental line speed and capability benefits will be identified and delivered through core renewal schemes. Opportunities for more comprehensive line-of-route gauging interventions are under consideration as part of the development of a Scottish Gauging Requirement, as specified in the HLOS and referred to in Appendix D.

The results of the prioritisation of needs

The prioritisation of outputs outlined in '*Scotland's rail infrastructure'* industry advice is consistent with Transport Scotland's emerging view of the likely availability of funds and government outcomes after 2019, reflecting early-stage development of a package to improve the Edinburgh Suburban route, progress further capacity increases and journey time improvements.

These included continuation and completion of activity commenced in CP5. The likely enhancement portfolio for post-2019 will identify interventions that improve station capacity, support HS2 service delivery, as well as infrastructure improvements on routes north from the Central Belt.

Within OM&R, stakeholder aspirations are broadly consistent – to have a reliable infrastructure and one that is resilient to major disruption (e.g. weather-related disruption). The plans set out in this document are focussed on achieving these aims across the network.

How these priorities link to short and long term route objectives

As enhancement programmes have been developed transparently and in collaboration with government and wider stakeholders, both within the rail sector and beyond, these are intended to be aligned to the Route priorities around asset condition, performance and capability. There has been an explicit consideration of opportunities to align investment in the network with renewal and maintenance opportunities, which will be factored into the programme development being taken forward with Transport Scotland.

3. Route objectives

3.1. Proposed Scorecard for 2018/19 (Draft Feb 2018)

Scotland Route Scorecard 2018/19

Safety	PRP % WEIGHTING		WORSE THAN TARGET	TARGET	BETTER THAN TARGET
Lost Time Injury Frequency Rate (LTIFR)		5%	0.400	0.380	0.370
Close Calls Raised		2%	8000	9000	10000
Close Calls Closed within 90 days	20%	3%	80%	85%	90%
Passenger train accident risk reduction measures		5%	60%	80%	100%
Top 10 Milestones to reduce level crossing risk		5%	6	8	10
Financial Performance	**PRP % WEIGHTING**		**WORSE THAN TARGET**	**TARGET**	**BETTER THAN TARGET**
Financial Performance Measure (FPM) - Gross excl. enhancements (£m)		5%	(£24.5m)	£0m	£24.5m
Financial Performance Measure (FPM) - Gross enhancements only (£m)	20%	5%	(£34.1m)	£0m	£34.1m
Cash Compliance –Income & Expenditure		10%	(£7.4m)	£0m	£36.8m
Investment	**PRP % WEIGHTING**		**WORSE THAN TARGET**	**TARGET**	**BETTER THAN TARGET**
Top Investment Passenger Milestones	10%	10%	60%	80%	100%
Asset Management	**PRP % WEIGHTING**		**WORSE THAN TARGET**	**TARGET**	**BETTER THAN TARGET**
Reduction in service affecting failures		5.0%	1.0%	2%	3.0%
6 Key Volumes		5%	90%	95%	100%
Track Plain Line (Track Km)		0.0%	160	169	178
Track S&C (Point Ends)		0.0%	75	79	83
Signalling (SEUs)	10%	0.0%	479	505	532
Underbridges (m2)		0.0%	21523	22718	23914
Earthworks (5 chain)		0.0%	625	659	694
OLE re-wire and mid life refurb (Wire runs)		0.0%	7	8	8
Conductor rail (Km)		0.0%	0	0	0
Train Performance Measures	**PRP % WEIGHTING**		**WORSE THAN TARGET**	**TARGET**	**BETTER THAN TARGET**
Abellio ScotRail PPM		8.0%	91.5%	92.5%	93.0%
Abellio ScotRail Right Time Departures		1.0%	80.0%	82.5%	85.0%
Abellio ScotRail Cancellations		3.0%	1.4%	1.2%	1.0%
DPI Reduction		2.0%	5.0%	10.0%	15.0%
Caledonian Sleeper Right Time Arrivals		2.0%	79.0%	80.0%	81.0%
Freight Delivery Metric		2.0%	94.0%	94.5%	95.0%
On time to 3		0.0%	87.7%	88.6%	89.2%
Cross Country right time departures from Edinburgh Waverley		2.0%	82.0%	84.5%	87.0%
Locally Driven Customer Measures	**PRP % WEIGHTING**		**WORSE THAN TARGET**	**TARGET**	**BETTER THAN TARGET**
Increase in Abellio ScotRail Passenger Numbers		3.0%	2%	4%	6%
Passenger Satisfaction %		6.0%	86	87	88
Annual Stakeholder Survey		2.0%	40%	50%	60%
Complaints per 100k Customer Journeys		2.0%	26	28	30
Number of Railway Works Complaints	20%	2.0%	0%	5%	10%
Staff Engagement		2.0%	58%	59%	60%
Abellio ScotRail %age improvement in average minute per mile travelled		2.0%	0.5%	1.0%	1.5%
Your Voice Action Plans Completed		1.0%	70.0%	80.0%	90.0%
		100%			

3.2. CP6 Long-term scorecard

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

Scotland	***Populate*** *(right click to reset)*		
Long Term Route Scorecard	**CP5**	**CP6**	**CP7**

Safety	**Targets**	**18/19**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**24/25**	**Achievability**
Lost Time Injury Frequency Rate (LTIFR)	Worse than Target	0.380	0.380	0.340	0.290	0.240	0.190	0.180	
	Target	0.400	0.360	0.320	0.270	0.220	0.170	0.160	
	Better than Target	0.420	0.340	0.300	0.250	0.200	0.150	0.140	
Train accident risk reduction measures	Worse than Target	60%	60%	60%	60%	60%	60%	60%	
	Target	80%	80%	80%	80%	80%	80%	80%	
	Better than Target	100%	100%	100%	100%	100%	100%	100%	
Top 10 Milestones to reduce level crossing risk	Worse than Target	6	6	6	6	6	6	6	
	Target	8	8	8	8	8	8	8	
	Better than Target	10	10	10	10	10	10	10	
RM3	Worse than Target	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Target	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Better than Target	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Train Performance	**Targets**	**18/19**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**24/25**	**Achievability**
Consistent Route Measure - Performance	Worse than Target	0.99	1.00	1.00	1.00	1.00	1.00	1.00	
	Target	0.95	0.96	0.95	0.95	0.96	0.95	0.95	
	Better than Target	0.92	0.93	0.92	0.92	0.92	0.92	0.92	
Freight Delivery Metric (FDM-R) - Scotland	Worse than Target	94.0%	93.5%	93.5%	93.5%	93.5%	93.5%	93.5%	
	Target	95.1%	94.5%	94.5%	94.5%	94.5%	94.5%	94.5%	
	Better than Target	96.4%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	
Abellio ScotRail PPM	Worse than Target	91.7%	93.5%	92.0%	92.0%	92.0%	92.0%	92.0%	
	Target	92.5%*	92.5%*	92.5%*	92.5%*	92.5%	92.5%	92.5%	
	Better than Target	93.0%	95.0%	93.0%	93.0%	93.0%	93.0%	93.0%	
Abellio ScotRail Right Time Departures	Worse than Target	80.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	
	Target	82.5%	86.5%	86.5%	86.5%	86.5%	86.5%	86.5%	
	Better than Target	85.0%	88.0%	88.0%	88.0%	88.0%	88.0%	88.0%	
Abellio ScotRail Cancellations	Worse than Target	1.4%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	
	Target	1.2%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	
	Better than Target	1.0%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	
Caledonian Sleeper right time arrivals	Worse than Target	79.0%	79.0%	79.0%	79.0%	79.0%	79.0%	79.0%	
	Target	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	
	Better than Target	81.0%	81.0%	81.0%	81.0%	81.0%	81.0%	81.0%	
Cross Country right time departures from Edinburgh Waverley	Worse than Target	82.0%	82.0%	83.0%	83.0%	83.5%	83.5%	84.0%	
	Target	84.5%	84.5%	85.0%	85.0%	85.5%	85.5%	86.0%	
	Better than Target	87.0%	87.0%	87.0%	87.0%	87.5%	87.5%	88.0%	

Customer	Targets	18/19	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Use of the network - passenger satisfaction (NRPS Abellio ScotRail)	Worse than Target	85%	88%	88%	88%	88%	88%	88%	
	Target	86%	90%	90%	90%	90%	90%	90%	
	Better than Target	87%	92%	92%	92%	92%	92%	92%	
Scottish freight growth on baseline	Worse than Target		1.5%	3.0%	4.5%	6.0%	7.5%	7.5%	
	Target		1.5%	3.0%	4.5%	6.0%	7.5%	7.5%	
	Better than Target		3.5%	5.0%	6.5%	8.0%	9.5%	9.5%	
Abellio ScotRail average timetabled minutes per mile travelled	Worse than Target								
	Target		1.584	1.582	1.581	1.578	1.576	1.58	
	Better than Target								
Abellio ScotRail Passenger numbers	Worse than Target								
	Target	N/A	TBC	TBC	TBC	TBC	TBC	TBC	
	Better than Target								
Average speed of Freight Services	Worse than Target								
	Target	N/A	TBC	TBC	TBC	TBC	TBC	TBC	
	Better than Target								
Employee engagement survey % engagement	Worse than Target		73%	74%	75%	76%	77%	77%	
	Target	N/A	75%	76%	77%	78%	79%	79%	
	Better than Target		77%	78%	79%	80%	81%	81%	
Carbon Emmisions Reduction	Worse than Target								
	Target	N/A	TBC	TBC	TBC	TBC	TBC	TBC	
	Better than Target								
Sustainability / Asset Management	Targets	18/19	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Reduction In Service Affecting Failures (SAF)	Worse than Target	1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	
	Target	2%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
	Better than Target	3%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	
CRI	Worse than Target		1.50%	3.02%	4.57%	6.14%	7.73%	1.5%	
	Target	-	2.00%	4.04%	5.90%	7.80%	9.60%	2.0%	
	Better than Target		2.50%	5.06%	7.69%	9.80%	12.34%	2.5%	
7 Key Volumes	Worse than Target	90%	90%	90%	90%	90%	90%	90%	
	Target	95%	95%	95%	95%	95%	95%	95%	
	Better than Target	100%	100%	100%	100%	100%	100%	100%	
Top Investment Milestones	Worse than Target	60%	60%	60%	60%	60%	60%	60%	
	Target	80%	80%	80%	80%	80%	80%	80%	
	Better than Target	100%	100%	100%	100%	100%	100%	100%	
Network Sustainability - measure to be defined	Worse than Target								
	Target	3%	-	-	-	-	2%	-	
	Better than Target								
Financial Performance	Targets	18/19	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Financial Performance Measure (FPM) - Gross Excl. Enhancements (£m)	Worse than Target	-24.5	-	-	-	-	-		
	Target	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Better than Target	24.5	-	-	-	-	-		
Financial Performance Measure (FPM) - Gross Enhancements only (£m)	Worse than Target	-34.1	-	-	-	-	-		
	Target	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Better than Target	34.1	-	-	-	-	-		
Cash Compliance – Income & Expenditure	Worse than Target	-7.4	-	-	-	-	-		
	Target	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Better than Target	36.8	-	-	-	-	-		

Long-term scorecard narrative

Our long-term balanced scorecard includes both national and Scotland-selected measures. The national measures are those specified by NR Group and/or ORR to support comparison across routes. The Scotland-selected measures reflect customer requirements (specifically Abellio ScotRail and Caledonian Sleeper requirements, consistent with their franchises, and CrossCountry in support of their wider performance objectives) and those specified within the Scottish HLOS. The definitions and/or forecasts for some metrics are under development, and the forecasts included here will be reviewed in light of the recent SOFA publication, and the output of workstreams detailed in Appendix D.

The above long-term scorecard has been consulted with customers via our September stakeholder workshop. It has also been the subject of separate discussion with ORR and Transport Scotland. Consultation has taken place with the FNPO team to align metrics and targets. The targets in the scorecard have been broadly supported by stakeholders since they align with both targets shared in the HLOS and franchise targets.

The LTIFR target is 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".

Service affecting failure targets have been peer reviewed with the Intelligent Infrastructure team to align our expectation of potential reliability improvements to that offered by the national programme.

Comments on those metrics rated as red under achievability:

**Abellio ScotRail PPM* - there is currently considerable uncertainty over whether the end-CP5 92.5% performance target will be met, with current PPM (P10 17/18) standing at an MAA of 90.4%. An independent review has been commissioned of the robustness of our performance plans, and this review is due to conclude end-January, after which our forecast trajectory to end-CP5 and through early years of CP6 will be revisited.

Comments on those metrics rated as amber under achievability:

LTIFR, RM3 – achieving industry-leading lost-time injury performance and increased levels of risk management maturity will require more than just investment in engineering solutions, it will require widespread behavioural change which is inherently challenging. There is additional uncertainty over RM3 due to its recent introduction in to the organisation and development required on target setting and measurement.

Train performance targets – delivering these measures require extensive cross-industry working and are dependent on customer performance as well as Network Rail activity. However, there is close alignment between these targets and franchise commitments supporting confidence in deliverability.

Customer measures – as per train performance, these measures (other than employee engagement, which is within our direct control) require joint industry working in order to achieve targets.

Reduction in service affecting failures and CRI – these output measures will require delivery of behavioural change as well as delivery of planned maintenance and renewal volumes, to better-exploit systems, information and technology to target activity where the most benefit can be realised (supported by the Intelligent Infrastructure Programme).

Regulatory floors

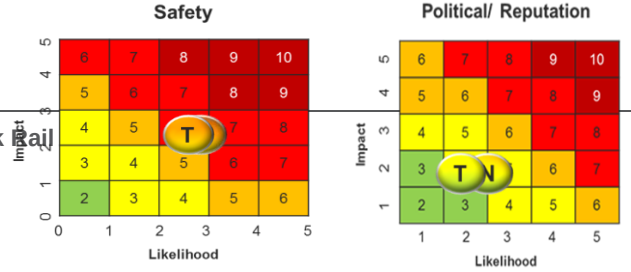
In order to give greater clarity on the minimum levels of performance and sustainability expected by the regulator (ORR), our plan includes regulatory floors for the key metrics in these areas. These floors, set out in the following table, will act as a level below which ORR would consider undertaking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

Regulatory floors	19/20	20/21	21/22	22/23	23/24
Network performance – passenger	1.28	1.28	1.28	1.28	1.28
Freight Delivery Metric (FDM-R)	92.5%	92.5%	92.5%	92.5%	92.5%
Network Sustainability	90%	90%	90%	90%	90%

4. Activity prioritisation on a page

4.1. Safety (activity prioritisation on a page)

Summary of objectives		Supported by the Home Safe Plan, deliver the Alliance objective "Everyone home safe every day"		
No.	**Key constraints, risks and opportunities**	**What we plan to do**	**Owner**	**Timescale**
1	(C) Work with the STE team to take on board initiatives as developed	The route will support CP6 HSE initiatives particularly through the delivery of the Home Safe Plan as they are developed by the central Safety, Technical and Engineering organisation, but have assumed that any specific costs for these schemes, beyond the activities of our core route headcount, are included within the central STE submission.	STE	Ongoing through CP6
2	(O) Improvements to trackside working, building on CP5 achievements	Continue with prohibition on unassisted red-zone working, and improve the daylight safe access to trackside through remote disconnection devices, lineside early warning system, TOWS, and increased use of LOWS. Improve night-time safe access through technology to facilitate safer, faster isolations. Overall, seek improvements to trackside working through the implementation of revised 019 standard.	Infrastructure Director	Ongoing through CP6
3	(R)Address key workforce safety risks (Driving, Fatigue, Manual Handling)	Focus to be occupational road risk with zero traffic offences and zero NR-caused road traffic collisions to be targeted Fatigue management procedure to be embedded across business with plans supported by use of smart rostering to reduce accidents, targeting door to door hours being achieved >95% of time. £2.5m has been identified in the plan to deliver this improvement. Actively review and design out unnecessary manual handling activities to reduce the number of musco-skeletal injuries experienced by our workforce.	Head of Route HS&E All line managers	Zero NR caused collisions by end CP6
4.	(R) Address workforce health risks	We will embed improvements to HAVS surveillance and monitoring so that by end CP6 there will be no new or worsening HAVs cases. We will continue improvements in the identification and management of asbestos risk on the network. We will embed improvements in the management of silica dust, as well as continuing campaigns on general workforce wellbeing, such as encouraging healthy eating, exercise and control of occupational cancers. Scotland Route will aim to achieve Healthy Working Lives Gold Standard by the end of the control period.	Infrastructure Director	End CP6
5.	(O) Achieve passenger and freight safety improvements aligned with core O,M&R plan	Investment in CP6 weather resilience will improve safety through improved operational controls (updated extreme weather plans), physical resilience through: scour-risk reduction, removal of earthworks adverse weather sites, increased use of telemetry, acceleration of vegetation clearance and strengthened off track maintenance. All high-risk scour sites to be removed by end-2023. Vegetation clearance accelerated to completion end-CP7. Our fencing programme will achieve a compliant lineside boundary by end CP6, mitigating animal incursion risk. Targeted renewal interventions will allow us to remove the highest risk platform cross falls.	DRAM	Various See text
6.	(O) Achieve public safety improvements through reducing level crossing risk	During CP6 we plan to spend £42.9m on signalling interventions at level crossings, with a FWI improvement of 0.07149, through enhancing 10 passive crossings in long signal sections, converting five crossings to full barrier level crossings and five AOCL+Bs to fully integrated-barrier crossings. We intend exploiting new technologies when they become available to reduce risk further such as AFBL and AHB+. We will work to determine the impact of future network enhancements on the suitability of risk control at impacted level crossing. Against our existing level crossing risk assessments we will deliver a continuous stream of improvements in terms of their quality and content. We will target and engage more with at risk local communities through safety programs and initiatives making our most vulnerable lineside neighbours a priority. We will continue to explore opportunities to reduce the level of suicides being committed on our infrastructure either through education or engineering controls.	Head of Route HS&E	Individual milestones through CP6



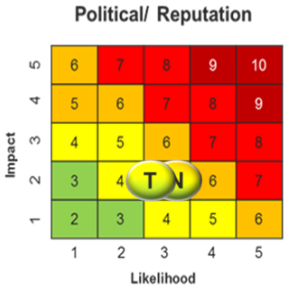
Summary of risk outcome

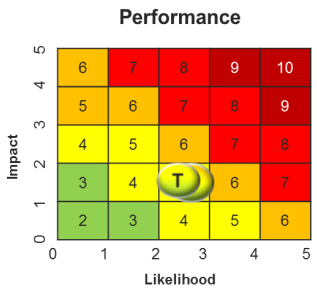
We aim to relentlessly focus on driving down the safety risk to public, passenger and our workforce, targeting our resources to the areas of highest risk to each.

Our plans pay particular attention to safety risk arising from extreme weather with a continuation of our focus on lineside maintenance including vegetation clearance and targeted renewals to improve weather resilience.

4.2. Train performance (activity prioritisation on a page)

Summary of objectives		Our objective is to deliver a ScotRail PPM of 92.5% by the end of CP5 and maintain it through CP6. CP6 Performance metrics will be enhanced following discussions with Transport Scotland; assumed they will be maintained at exit CP5 levels, while growth is supported.			
No.	**Key constraints, risks and opportunities**	**What we plan to do**	**Owner**	**Customers impacted**	**Timescale (start/ finish)**
1	(O) Improving asset performance	An £8m annual Asset Improvement Programme (AIP) aimed at providing DU autonomy to identify and action local small scale asset improvement initiatives, reducing asset failures and drive improved performance. This will continue through CP6	Infrastructure Director	All train operators	Tranche 1, end 16/17. Ongoing through CP5/6
2	(O) Current timetable are sub optimal and create performance conflicts during normal running	Use of modelling and data warehouse tools (TRIP) to carry out detailed reviews of SRTs, junction margins and headways to inform revisions to timetables to improve service specification and performance	Head of Integrated Performance	All train operators	Phase 1 Dec 17 Ongoing further TRIP analysis
3	(O)Time to recover after incidents during the peaks results in significant performance impacts.	Implementation of twice daily conference calls, led by the Alliance Directorate. Focussing on the performance of the morning peak to identify areas for improvement in incident response, decision making and customer delivery.	Head of Integrated Control	All train operators	In place and ongoing
4	(R) The DPI across all incidents continues to increase	LEAN review across the Alliance to identify opportunities for improvement in train service delivery by improving our response to incidents while reducing overall incident numbers.	Head of Integrated Performance	All train operators	Action plan Dec '16 Implementation end CP5 & CP6
5	(R) Performance impact of fleet and asset changes, driven by the delivery of significant enhancement programmes,	The introduction of new fleets does not have a negative impact on Route performance. This requires an integrated asset and fleet programme including robust pre-services trials, timetable stress testing and post introduction reviews.	Projects and Transformation Director	Alliance services	Dec 2020
6	(R) BAU performance improvement process declines due to focus on other issues	Alliance Directorates each have a performance improvement plan reported to the Alliance Director on a weekly basis. Report progress to TS and ORR on regular basis	Head of Integrated Performance	All train operators	In place and will continue throughout CP6
7	(R) Introduction of new trains and services to meet the increase in passenger demand adversely affect performance	Delivery and resilience plans are being developed within Scotland to mitigate the initial impact of the trains (385 and HST). Whilst initial impact of the 385s in expected to be negative the long term impact of 385s replacing 170s is expected to be positive. The cascade of existing fleets is planned to combat the passenger growth expectations on a number of lines of route.	Head of integrated Performance	All train operators	In place by Dec '17 and will continue into CP6
8	(O) Increased weather resilience	Deliver increased resilience to extreme weather events reducing disruption, delivered through enhanced lineside maintenance and targeted renewals, it is aimed at reducing incidents of line closures and restrictions, as well as reducing recovery time.	DRSAM	All train operators	In place and ongoing





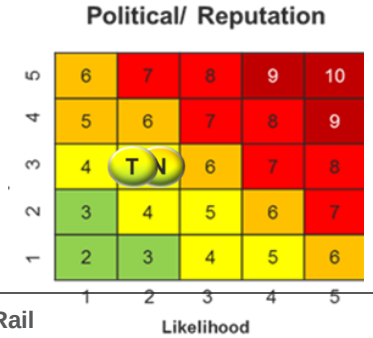
Summary of risk outcome

Train performance is subject to close political, regulatory and media scrutiny. Delivery of the various performance plans is key to recovering the Political and Reputational position, this in turn will deliver and sustain an acceptable performance position by end CP5. We will then aim to sustain this level of performance while supporting passenger growth through CP6.

4.3. Locally driven customer measures (activity prioritisation on a page)

Summary of objectives	To build the best railway Scotland has ever had – encouraging growth in passenger numbers and freight transported on the network, in support of wider Government objectives to support economic growth and reduce carbon emissions.

No.	Key constraints, risks and opportunities	What we plan to do	Owner	Customers impacted	Timescale
1	(O) Passenger Satisfaction must be sustained through CP5 and CP6, as a franchise obligation, but more importantly to support our mission of significantly increased passenger journeys.	Primary drivers are train performance (link to performance plans and information during disruption (PIDD plans)), cleanliness (new trains, additional CET tanks at Motherwell, Yoker, Corkerhill) and capacity (new train fleets)	Customer Experience Director	ASR	Six-monthly assessment through CP5 & 6
2	(C/R/O) Specified target for Abellio ScotRail average timetabled minutes per mile travelled	To address the HLOS requirement to support the Abellio ScotRail franchise targets for journey time reductions we will need to work together to understand baseline performance and the forecast effect of existing interventions, including trade-offs with other performance metrics. We will then seek to develop improvement plans where required (see Appendix D).	Strategy & Planning Director	ASR	Mar 2018
3	(C/O) Specified target for average speed of freight services operating within Scotland	We will work with industry colleagues to better understand baseline performance and the forecast effect of existing interventions. We will then seek to develop improvement plans where required (see Appendix D)	SRFM	All freight services	Mar 18
4	(C/O) Specified target for achieving growth in freight	Key actions led by SRFM to deliver a plan to target 7.5% growth in volume by end CP6 (net kgtm, coal excluded from baseline) including targets for new flows to be introduced to network, plan to make using rail freight easier and developing more flexible approach to new traffic. Rolling programme of commodity/regional workshops and stakeholder engagement Work with route to requirements to deliver freight elements of HLOS (see Appendix D)	SRFM	All freight services	Mar 18
5	(C/O) Carbon emissions	We will appoint an energy manager in CP5 and with this extra resource we will develop a plan to progressively reduce normalised emissions through CP6.	DRSAM	All	Mar 18



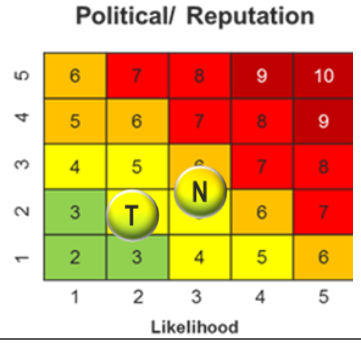
Summary of risk outcome

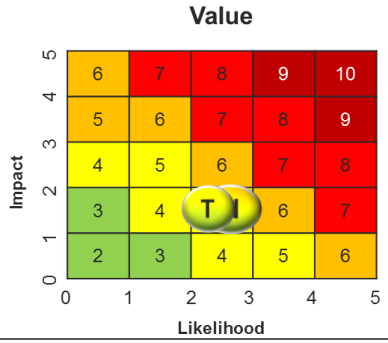
To drive positive feedback from existing passengers and freight customers, and encourage modal shift to the rail network for new passengers and freight shippers.

4.4. Sustainability & asset management capability (activity prioritisation on a page)

Summary of objectives	Our objective is to achieve a sustainable asset management plan in line with our Scotland priorities and national asset policies placing particular focus on initiatives to address risk from severe weather

No.	Key constraints, risks and opportunities	What we plan to do	Owner	Timescale
1	(C/R) Working within a constrained funding envelope	Our plan assumes the SOFA is in line with our forecast expenditure, if there is a material change, or delay in publication, we will review our planned activities and forecast outputs in light of these.	DRSAM	Jan 2018
2	(C) No finalised enhancement programme to integrate	We will continue to develop our renewal plans alongside our enhancement plans, and make Transport Scotland and DFT aware of key decision points where renewals will need to progress on a standalone basis. In certain circumstances (notably Carstairs) we will develop renewal and enhancement options in parallel to reduce risk of delay. To be reviewed on publication of the Capital Investment Strategy.	DRSAM	Early 2018
4	(R) Efficiency plans and unit rates are not mature	We will continue to work to develop our efficiency plans and support the national asset efficiency groups to develop our plans following SBP publication.	DRSAM	Ongoing from now through CP6
5	(R) Passenger journey times and freight average speed targets have no baseline plan	We will work with industry colleagues (Abellio ScotRail and freight operators) to define baseline calculations and the forecast effect of existing interventions. We will then seek to develop improvement plans where required (see Appendix D)	Strategy & Planning Dir	Mar 2018
6	(R) Changes to E&W plan may result in increased costs in Scotland (e.g. HO & overhead costs).	Ensure knock on effects of individual Route decisions are considered at a national level. To be reviewed and monitored by the DRSAMs at the periodic DRSAM mtg and Business Plan Integration Group.	DRSAM	Ongoing from now through CP6
7	(R) Gauging requirements require significant capital investment	We will work with industry colleagues to develop appropriate plan and progress any enhancement investment as a pipeline project (see Appendix D)	DRSAM	Mar 2019
8	(O) Increased activities to provide enhanced weather resilience to reduce disruption from severe weather as seen in early CP5	Targeted standalone drainage and scour protection works to improve resilience to flood events. Maintenance activities including vegetation and drainage management have been enhanced.	DRAM	Ongoing from now through CP6
9	(O) ISO55000 asset management capability	The route has committed to achieve asset management capabilities that demonstrate alignment to ISO55001 through independent certification or self-assessment.	DRSAM	End Sept '19





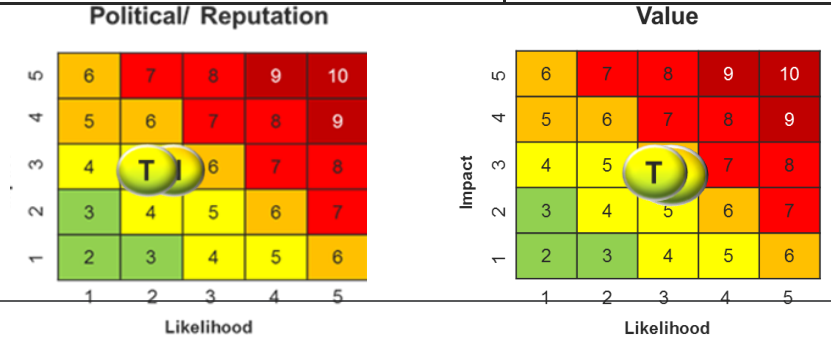
Summary of risk outcome

Delivery of sustainable asset management supporting our wider Alliance objectives. In the event of similar weather being experienced in CP6 to that seen in CP5 we would forecast a reduction in the level of disruption to passenger and freight users.

4.5. Financial performance (activity prioritisation on a page)

Summary of objectives	The financial objective is to deliver the OMR and Enhancement work bank within the funding agreement and at a level that demonstrates a positive FPM.

No.	Key constraints, risks and opportunities	What we plan to do	Owner	Customers impacted	Timescale (start/ finish)
1	(R) Cash constraints towards the end of CP5 limits the ability to smooth CP6 OMR and Enhancement work bank potentially leading to inefficiencies in resource planning both for internal and external parties.	Periodic updates for the Borrowing Requirement for Scotland are being undertaken to identify potential funding over and above the assumed RF11 / RF2 positions.	Route Finance Director	Transport Scotland, Infrastructure Projects and Supply Chain	In place and ongoing
2	(R) Reduction in efficiencies delivered or unexpected increases in spend mean the Borrowing Limit is reached / exceeded.	Periodic updates for the Borrowing Requirement for Scotland are being undertaken to identify risks along with regular reviews of progress around the OPEX efficiencies.	Route Finance Director	Transport Scotland and Infrastructure Projects	In place and ongoing
3	(O) Potential of additional efficiencies around access for Enhancement Projects from the Alliance.	Access arrangements for specific Enhancement Projects are being reviewed with Abellio ScotRail to mitigate contractor costs. This would also bring increased certainty over delivery timeframes for stakeholders.	Alliance Director	Transport Scotland and Abellio	Summer 2017 to end of CP6
4	(R) Reduced access due to the increase in electrification across the Route may negatively impact on Maintenance and Renewals costs.	An assumed headwind has been included within the CP6 plan but additional reviews and testing are required to finalise the impact.	DRAM	Head of Maintenance & All Train Operators	Autumn 2017 to end of CP6
5	(R) Reduced access due to the increase in level of traffic on the network may negatively impact on Maintenance and Renewals costs.	Develop a whole-Alliance plan to maximise rail travel in Scotland, to include performance plans, marketing plans and station environment improvements	Alliance Director	Abellio	Autumn 2017 to end of CP6
6	(O) Renewals unit rates have been extremely volatile through CP5 and assumptions around efficiencies have not been delivered in full.	Renewals unit rates for CP6 are being based on existing run rates with more appropriate assumptions around what efficiencies can be delivered. These assumptions will continue to be reviewed up to RF6.	DRAM	Infrastructure Projects	Autumn 2017
7	(O) Moving additional Renewals works from 'buy' to 'make' has demonstrated efficiencies through CP5 and could expand further in CP6.	Certain work banks have been moved from IP to Works Delivery for CP6 but additional reviews will be undertaken before RF6.	Infrastructure Director	Infrastructure Projects	Autumn 2017



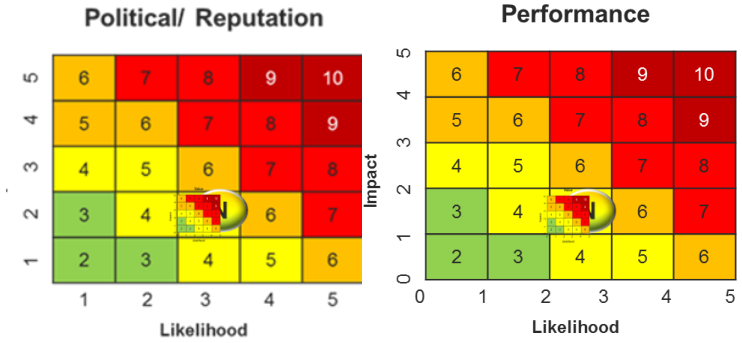
Summary of risk outcome

Financial risks are currently being managed within risk appetite but there a number of emerging challenges towards the end of CP5 and into CP6 that require regular review and potential changes to the renewals work bank at RF6 if these risks crystallise. There a number of levers that can be used to mitigate risks and the completion of a robust CP6 plan will assist decision making.

4.6. Investment: capacity & growth (activity prioritisation on a page)

Summary of objectives	Our objective is to deliver the outputs specified in the Enhancements Delivery Plan for CP5, while supporting our Alliance partner in the introduction of new fleet to take advantage of the new infrastructure. We will also continue to work with industry partners and Transport Scotland to develop, agree and deliver the High Level Output Specification for CP6.

No.	Key constraints, risks and opportunities	What we plan to do	Owner	Customers impacted	Timescale
1	(R) There is a risk that franchise commitments and variations do not align with EDP requirements.	A Major Projects Portfolio Board has been created to oversee alignment between franchise and infrastructure projects. Integrated Project Reviews are also taking place at working level.	Alliance Managing Director	ASR	In place and ongoing
2	(C) Statutory Consents for the delivery of Glasgow Queen St have not been granted in line with planned programme.	NR is working with TS to identify opportunities to reduce the programme impacts of the extension arising from the consents programme.	Director Route Sponsorship	ASR	TBC
3	(C) EGIP Key Output 1 not delivered to EDP milestone.	A revised programme is in place for the introduction of Class 385 rolling stock following delay to infrastructure and fleet availability.	Director Route Sponsorship	ASR	March 2017
4	(R) Rolling Programme of Electrification not delivered to EDP milestones.	A single electrification PMO is in place to oversee delivery of these programmes.	Director Route Sponsorship	ASR	Various
5	(R) Power feeding capacity of OLE system is insufficient to allow the new electric rolling stock to operate as expected,	Additional power modelling has been undertaken to assess future demand requirements and to identify any requirements for intervention. Work now being progressed to address shortfalls	RAM E&P	All train operators	March 2018
6	(R) Development of enhancement projects in sufficient time to allow effective development and delivery of proposed outputs in CP6/7.	Network Rail has published the Scotland Route Study and Investing in the Future documents to inform Scottish Government in their consultation process beyond CP5. Network Strategy & Capacity Planning, Operators, Transport Scotland and ORR have meetings in place to develop the strategy for the HLOS specification.	Director Route Sponsorship	All train operators	March 2019
7	(O) With our Alliance partner we aim to increase passenger numbers by significantly by end-CP6, by exploiting capacity generated in CP5, while sustaining performance.	Develop a whole-Alliance plan to maximise rail travel in Scotland, to include performance plans, marketing plans and station environment improvements	Alliance Managing Director	ASR	March 2018



Summary of risk outcome

Enhancement regulatory milestones and expected outputs delivered in CP5 with plans developed with the support of all stakeholders for CP6

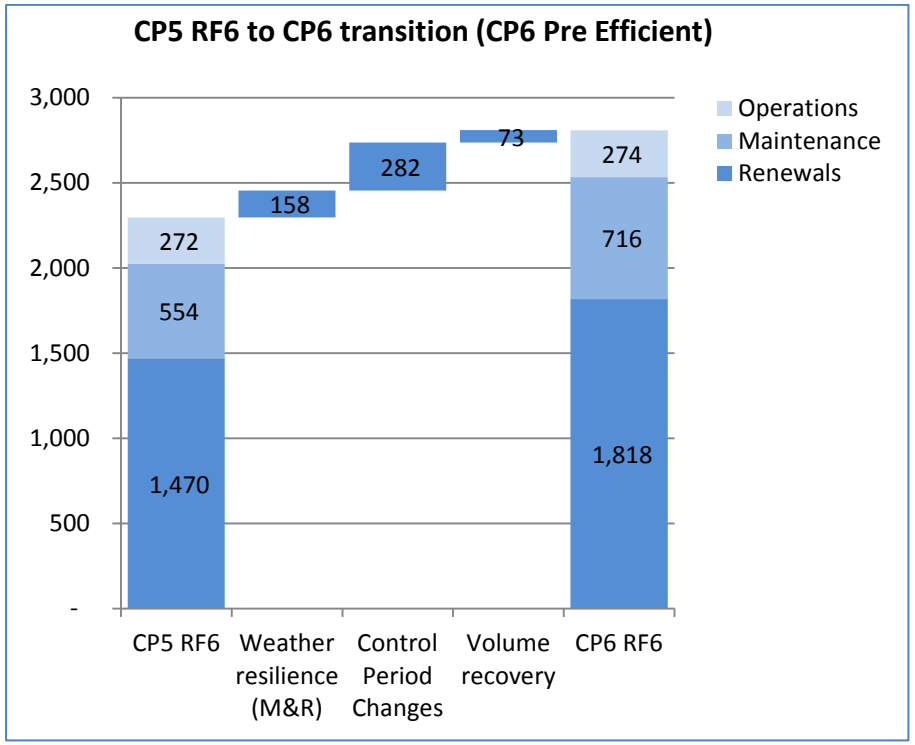
Activities on a page and Risk

The route has reviewed the risks identified on the “activities on a page” to ensure they are either addressed on one of the route’s Enterprise Risk Registers or covered elsewhere in the route’s risk management processes

5. Activities & expenditure

5.1. Cost and volume summary

The pre-efficient cost forecasts in this plan for O, M&R in CP6 are approx 22% higher than in CP5, and this reflects three primary cost drivers: the aim to invest more to provide increased physical resilience to extreme weather events, the age profile of assets and other differences between control periods (such as increasing electrification and passenger numbers) and volume recovery in CP6 linked to deferrals due to higher than targeted unit rates in CP5.



Category	Description
Weather resilience (£62m OPEX)	• Increased planned fencing, drainage, vegetation and lineside maintenance activities • Acceleration of our vegetation removal programme to achieve compliance by the end of CP7 (v CP8) • Increased number of planned and reactive examinations of bridges following adverse weather events • Drain train utilisation to support slab track strategy
Weather resilience (£96m CAPEX)	• Reducing the overall number of earthworks susceptible to failure as a result of extreme rainfall • Remediation of remaining scour high risk sites and other targeted remediation • Additional standalone drainage schemes • Coastal/estuarine defence improvements • Conversion from traditional signalling to axle counters to reduce impact of flooding and lightning • Additional remote condition monitoring of assets and use of novel technology to predict failure
Control period changes	• Commencement of Mk1 OLE refurbishment • Increased maintenance requirements generated from projected traffic growth in the route (1.9% in CP6 on top of 3.5% in CP5) • Additional OLE planned maintenance activities resulting from expansion of the electrified network (25.1% increase in CP5) • Increased track CAPEX activities including renewal of longitudinal timbers on the Forth Bridge renewal • Increase in franchise station spend supporting passenger growth
Volume recovery	• CP5 Track and Signalling unit rates higher than targeted requiring volume to be deferred to 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 costs will be supplemented by an additional £200m of route headroom. 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 separately 'ring-fenced' for Scotland and controlled through our corporate business planning process. Increased investment will depend on successful delivery of the company's plans and good business cases.

Renewals

This plan is aligned to asset policies, and is based on current guidance from Professional Heads on application of policy and the phasing of legislative compliance and safety initiatives (e.g. electrical safety). It includes work to improve resilience and increased investment in signalling power supplies to contribute to maintaining safety risk levels. Recognising the risk to Scotland's rail network, the plan includes adjustments to maintenance activity in CP6 and renewal schemes targeted at improving weather resilience, including standalone drainage solutions to reduce the impact of flood events and remediation of the poorest condition earthworks – proportionally increasing earthworks expenditure over CP5 in recognition of the risk posed by earthworks. Plans also make provision to reduce specific risks with crest drainage on earthworks susceptible to heavy rainfall, on sidelong ground and at poor track quality locations. Rollout of further remote condition monitoring systems including fibre optic rock fall detection and slope stability monitoring.

Following on from the introduction of the Asset Improvement Plan (AIP) initiative in 2016 (a capital investment fund directed to performance improvement), the plan makes greater allowance for DU autonomy to identify and action local small scale asset improvement initiatives to reduce asset failures and drive improved performance, with a dedicated £8m pa included for these works.

Phasing of cost and volumes has been reviewed since December plan update to address deliverability considerations, and to more accurately reflect our delivery plan.

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

	Unit of Measure	Funded by	CP5 (£m) @ RF6						CP6 (£m)						CP7 (£m)
			14/15	15/16	16/17	17/18	18/19		19/20	20/21	21/22	22/23	23/24	CP6	24/25
Track	£m	Renewals	81	111	166	131	100	589	108	165	181	123	93	**670**	148
Conventional Signalling	£m	Renewals	25	32	50	93	96	296	78	124	76	76	39	**392**	37
Structures	£m	Renewals	68	81	65	56	49	319	60	66	67	61	56	**310**	65
Earthworks	£m	Renewals	22	21	22	21	23	109	26	32	32	29	29	**149**	32
Drainage	£m	Renewals	8	10	9	6	4	37	13	10	7	5	3	**37**	7
Buildings	£m	Renewals	19	21	10	11	10	70	20	22	27	17	10	**95**	19
Electrification & Fixed Plant	£m	Renewals	6	10	9	15	10	50	8	12	14	13	13	**61**	11
Other	£m	Renewals	-	-	-	-	-	-							-
Total Renewals	**£m**	**Renewals**	229	285	331	333	291	1470	**313**	**431**	**405**	**323**	**242**	**1714**	**319**
Digital Railway	£m	DR Programme	-	-	-	-	-	-	-	-	-	-	-	**-**	-
Total Renewals + Digital Railway	**£m**	**All**	**229**	**285**	**331**	**333**	**291**	**1470**	**313**	**431**	**405**	**323**	**242**	**1714**	**319**

KEY RENEWAL VOLUMES

	Unit of Measure	Funded by	CP5 @ RF6						CP6						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
Plain Line	Linear track m	Renewals	141866	216730	246000	210000	174000	**988596**	140616	221410	228522	180365	146587	**917500**	192600
S&C	No. of S&C units	Renewals	61	110	107	91	83	**452**	87	96	96	84	103	**466**	98
Conventional Signalling	SEU	Renewals	4	8	18	162	532	**724**	20	178	259	264	61	**782**	3
Digital Railway	SEU	DR Programme	-	-	-	-	-	**-**	-	-	-	-	-	**-**	-
Embank/Soil Cut/Rock Cut	No. of	Renewals	727	729	769	668	692	**3585**	670	731	807	714	710	**3632**	761
Underbridges	Number of assets intervened on	Renewals	-	-	-	-	-	**-**	42	52	57	56	54	**261**	54
Underbridges	m2 plan deck area worked on	Renewals	10933	25560	25530	21044	23914	**106981**	16,598	16,120	17,669	17,359	16,740	**84486**	25501
Wire runs	No. of	Renewals	37	25	37	0	8	**107**	0	0	5	10	10	**25**	10
Conductor Rail renewal	Km	Renewals	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0

Maintenance

With Scotland's railway undergoing enormous change in CP5 and CP6 it is vitally important that our Maintenance Strategy clearly demonstrates how it supports the Scottish Governments priorities for economic growth and development.

The strategy is aligned with delivering a high performing network through CP6 while supporting continued passenger and freight growth. It also reflects the route's safety targets and plan to continue to improve workforce safety with an ongoing focus on driving risk; slips, trips and falls; and manual handling injuries. The strategy also includes the infrastructure reliability improvement required to align with our PPM targets, and what this means for delay per incident [DPI].

Maintaining the Scottish network is particularly challenging as it is one of the most diverse in the UK, combining high-speed cross-border routes, a dense suburban railway in the Central Belt, and rural routes running through the most isolated and exposed mountainous areas in the country. The strategy demonstrates how we make best use of our resources, innovation and best practise to deliver the challenges across the entire network taking into consideration location, geography and weather conditions.

To assist the delivery of CP6 targets, it is vitally important that that the network is increasingly reliable through the control period. Maintenance plays a key part in the delivery of improved asset performance via risk based asset maintenance and delivery of Asset Improvement Plans. Maintenance will work closely with Operations and Renewals to deliver the OM&R plan which will be supported by three key pillars:

Physical resilience to extreme weather

To provide increased physical resilience to extreme weather events, to reduce the impact on passengers and freight shippers of disruption as experienced in CP5. This resilience will be delivered through enhanced lineside maintenance interventions and targeted renewals, and is aimed at both reducing incidents of line closures and restrictions, as well as reducing recovery time when operations have to be restricted in the most extreme events

Data-driven maintenance plan

A data-driven maintenance plan based on 'predict & prevent' - utilising remote condition monitoring, risk-based maintenance, train-borne measurement and other technologies to drive the correct intervention at the correct time, to prevent unplanned disruption to our passengers and freight users.

Continuous improvement

A continued focus on Lean techniques within the maintenance delivery units, with waste elimination allowing effort to be reinvested in the targeted delivery of further reliability improvement works.

The Activity Based Planning (ABP) model has been used to provide a bottom up estimate of maintenance resources and costs for CP6. The ABP model is principally driven from volumes developed by our Route Asset management team and factors in risk based maintenance intervention levels and migration to train borne measurement. Main drivers for volume increases come from the following factors that differentiate from the CP5 plan:

- Volume allowance included for traffic growth impact, with expected increase in track access charge for additional services.
- Resilience, management of cleared lineside, phased through control period to maintain lineside vegetation (weed spray and manual means) following significant vegetation clearance in CP5 and CP6. This will reduce impact of extreme weather by managing lineside vegetation.
- Increased OLE maintenance costs for new electrification infrastructure introduced at the end of CP5.
- Increased fencing and drainage maintenance activities to reduce animal incursion risk (fencing) and reduce whole life cost of Track asset and improve reliability (drainage). This includes provision for the drain train which will be targeted at slab track assets.
- Increased Track maintenance activities in ballast re-profiling to support rollout of PLPR and correction of plain line track geometry.

By the end of CP5 there will have been an approx. 25% increase in the number of single track kilometres (stk) of OLE, from 1,671 stk to 2,100 stk. The successful delivery of the Borders Railway from Edinburgh to Galashiels introduced 33 miles of new track and associated Signalling, Fixed Plant, Earthworks and Structures assets as well as seven new stations. This plan includes for the additional maintenance of these assets, although additional costs have not been included for any further enhancements that may be funded in CP6.

Over and above the introduction of additional maintenance staff we are creating an in house isolation management and delivery team. Not only will this improve how we manage isolations across the Route it will also provide an opportunity to deliver minor maintenance activity maximising work in the isolation and to also improve the management of vegetation in and around OLE.

During CP5 there have been numerous discussions internally and with the ORR on the volumes of Off Track activity that are required to achieve compliance with NR Off Track standards. The maintenance and route asset management teams have identified the volume of activity required to achieve a compliant asset and a number of organisational models that could be used to deliver these. These volumes have been built into the ABP and have identified the volume of resource required per year in order to achieve compliance by the end of CP7. Discussions are ongoing regarding the delivery method, which will be finalised in due course.

To assist the delivery of Off Track in the CP6 plan we are considering introducing a dedicated Off Track Maintenance Engineer within each of the 4 delivery units. This post will provide greater focus on all elements of Off Track within Maintenance including inspection, physical works and compliance. Not only will this provide an Off Track focus it will also give the Track Maintenance Engineer the opportunity to focus on all track related issues.

There are a number of initiatives that we are considering as part of our plan to deliver our safety targets, improved passenger growth, and improved asset reliability. Each of these initiatives fits into one of the 3 Key Pillars that were mentioned previously. Some of these initiatives include:

Risk Based Maintenance for Signalling

During years 3 and 4 of CP5 the maintenance team have been working on the introduction of Risk Based Maintenance (RBM) for Signalling across all Signalling sections in the Route. The exercise has reviewed every Signalling schedule and identified if the frequency of maintenance can be altered. This will then be used to create a new efficient cyclic engineering access plan across all sections on the Route. This plan will be used as the basis for

access for all other maintenance activities creating one maintenance cyclic access plan across each section within the Route.

Management of II / RCM – 'predict and prevent'

Throughout CP4 and CP5, Scotland Route started implementing RCM technology and has spent £5.5m to date. During CP5 this expanded across the areas of Signalling, Electrification, Distribution & Plant and Telecoms and current plans equate to an additional £4.4m of equipment being fitted. Although the system has matured and our knowledge of asset condition and failure trends has improved we require to do further work so that we optimise the benefits arising from these systems. This includes the introduction of additional flight engineers and a dedicated II/RCM manager. The II Manager will take responsibility for the team, manage II equipment ensuring that we have maximum coverage of operational equipment and producing monthly reports indicating system performance, missed opportunities and benefits achieved

Improved Asset Reliability

We will continue focus on asset improvement plans to improve the reliability at key network hubs as well as renewal and refurbishment projects. As part of our maintenance plan, along with RBM for Signalling and improved management of II, we will continue to deliver our Asset Improvement Plans which have made significant improvements to asset condition and reliability across the Route. These plans will continue to be included and monitored via the Alliance's Performance Improvement Plans (PIPs).

Signalling Power Supplies

To achieve compliance with the Electricity at Work Regulations 1989 in regard to the inspection & testing of signalling power supplies, specified volumes have been added to the ABP model to understand the necessary resource profiles with support from the asset management team. It is intended to achieve compliance on an incremental basis as we transition towards CP6.

Cable Management Group

Throughout CP4 and CP5 the Cable Management Group has managed the maintenance and renewal of 650v cables in the Route. The group has had significant success with the reduction in asset failures during this time. As we continue to role out Earth Leakage Detectors on our signalling assets we gain better knowledge of the condition of our assets. The Cable Management Group will use this information to make sure cable maintenance and renewals are based on the condition of the assets.

Water Management Group

The Water Management Group, which successfully managed almost 100 flooding sites during CP4 and CP5 will continue to target water and drainage issues. Maintenance plays a key part in the identification of sites, putting mitigating measures in place until renewal plans are implemented.

Technology Improvements

During the course of CP5 we have been able to utilise Unmanned Aerial Vehicles or Drones as they are commonly known for tracking progress of work on sites including Logan and Lamington viaduct. As technology improves we are investigating the use of Drones for the inspection of assets including vegetation, fencing and OLE. We are also increasing the use of video footage, where small video cameras are fitted to trains, either in the cab or pantograph well and which will used to monitor vegetation growth and to inform resources where work is required to be undertaken before signals are obscured or OLE equipment damaged.

Revolution in Rail

As part of Revolution in Rail, the Route is reviewing our current response capability. With increased traffic across the Aberdeen to Inverness corridor and on the Highland mainline is it likely we will need to increase the numbers of Signalling staff at Keith and Aberdeen so that we can provide 24/7 coverage. We are also considering resources between Perth and Inverness.

Operations

Operations cost forecasts are based on the impact of known CP5 renewals and enhancement led signalling schemes and forecast CP6 renewals schemes. A provision has been included for training and re-deployment of displaced staff. An allowance has been made to increase the operational capability of the Electrical Control Room (ECR) at Cathcart taking account of all the electrification schemes due to be delivered by the end of CP5.

OPEX COSTS (Maintenance, Operations & Support)

(Pre & post headwinds and efficiencies in 17/18 prices, excl. Headroom)

	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	49	49	47	44	44	**234**	53	53	53	53	54	**266**	**54**
Off track	4	4	3	5	5	**21**	9	11	14	16	17	**67**	**17**
S&T	18	18	17	18	18	**90**	18	18	18	18	17	**89**	**17**
E&P	7	7	6	7	8	**35**	9	9	9	9	9	**44**	**9**
DU HQ	8	8	8	5	5	**33**	8	8	8	8	8	**40**	**8**
DU/WD Maintenance ex B&C	85	85	82	80	81	**413**	98	100	102	104	105	**507**	**105**
Non DU Maintenance	11	17	21	26	19	**93**	25	25	25	25	25	**126**	**25**
Civils: Buildings Maintenance	0	0	5	5	5	**15**	5	5	5	5	5	**26**	**5**
Civils: Structures Maintenance	0	0	10	10	10	**30**	10	10	10	10	10	**51**	**10**
Civils: Earthworks Maintenance	0	0	1	1	1	**2**	1	1	1	1	1	**4**	**1**
Total Maintenance Costs (pre)	96	102	118	122	116	554	139	141	143	145	146	714	146
Total Maintenance Costs (post)							**137**	**135**	**134**	**135**	**134**	**675**	
Operations	50	56	51	50	50	**256**	51	51	51	51	51	**256**	**51**
Support	3	3	3	3	4	**17**	4	4	4	4	4	**18**	**4**
Operations & Support Costs (pre)	53	59	54	53	54	272	55	55	55	55	55	274	55
Operations & Support Costs (Post)							**58**	**57**	**56**	**56**	**56**	***283***	
Total Controllable Costs (pre)	149	161	172	175	169	826	194	196	198	200	201	988	201
Total Controllable Costs (post)							**196**	**192**	**190**	**191**	**189**	**958**	
Non-Controllable Costs		-	-	-	-			-	-	-	-	-	
Headcount													
Permanent	2366	2436	2494	2604	2624		2,723	2,7102	2,656	2,664	2,673		2,673
Agency	9	7	11	8	24		-	-	-	-	-		

Note: Headcount forecasts are sensitive to the successful delivery of our Operations and Maintenance efficiency plans including maximising time on tools, improving fatigue management and delivery of future deployment strategies. As there are currently no new CP6 enhancement schemes committed, no allowance has therefore been made in the Operations and Maintenance costs in the above table.

Enhancements costs

The following table shows the committed CP5 enhancement schemes that will continue into the first year of CP6. The table below shows the Category 2 enhancement options for funders (as listed in the Scotland Rail Infrastructure, Feb 17 document) currently considered most likely to be progressed in CP6. Our renewals plan is compatible and aligned with these enhancements but is not dependant on them and the assumption in the plan is that the renewals can be delivered in a standalone fashion (with the exception of Carstairs, where an element of enhancements funding may be required to fund the linespeed improvements that will be delivered as part of the S&C project). The full impact on the OM&R plan, including costs and outputs, of new CP6 enhancements will be considered as part of their development through the pipe line process. It is anticipated that the pipeline for early CP6 will be agreed by the end of February 2018, and articulated through the Capital Investment Strategy.

ENHANCEMENTS COSTS (in 17/18 prices) (Jan 18)

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
-	EGIP	Ongoing	87	171	190	112	49	609	42	-	-	-	-	-	
-	Borders	Complete	162	20	-1	0	1	182	-	-	-	-	-	-	
-	Rolling programme of electrification	Ongoing	29	26	64	132	115	365	10	-	-	-	-	-	
-	Aberdeen to Inverness - Phase 1	1	6	12	27	79	124	248	69	-	-	-	-	-	
-	Dunbar down platform	1	0	1	0	0	3	4	11	-	-	-	-	-	
1	Edinburgh Suburban Enhancement programme	2													
2	Dunblane to Perth corridor enhancements	2													
3	Carstairs re-modelling	2													
4	West of Waverley capacity enhancement	2													
5	Edinburgh Waverley lengthening platforms 1 & 20	2													
6	Greenhill Junction grade separation	2													
7	East Kilbride line enhancement / electrification	2													
8	Prestonpans to Drem four- tracking	2													

Edinburgh Suburban Enhancement programme

- Provides additional gauge-cleared freight, diversionary and potential depot movements in the Edinburgh area
- Electrification and reinforcement of 25kv AC power supply through additional feeder station at Currie
- Improved junction layout and line speed improvements in Edinburgh area to support wider benefits to users

Dunblane to Perth corridor enhancements

- Opportunities to provide faster journeys and additional passenger and freight capacity, including potential electrification
- Renewals synergy for both signalling, track and civils assets

Carstairs remodelling

- Renewal-driven opportunity to reduce journey times, simplify track layout and provide resilience – will also support HS2 connectivity. Depending on final option selection this scheme may be supported by DFT and/or TS enhancement funding contributions.

West of Waverley capacity enhancement

- Additional capability to handle longer, faster trains, including more flexibility and potential timetable improvements

Edinburgh Waverley – lengthening platforms 1 and 20

- Allows longer trains to operate, meeting forecast demand and increasing operational flexibility

Greenhill Junction grade separation

- Provides additional capacity and supports improvements in journey times from Strathclyde to the north, and delivers performance benefits

East Kilbride line enhancement / electrification

- Greater capacity to handle passenger demand, and more operational flexibility, including potential synergy with rolling stock strategy

Prestonpans to Drem four-tracking

- Potential option to increase capacity and operational flexibility on East Coast Main Line, permitting additional local and freight services to operate

Digital Railway ready specifications

For like-for-like renewals (e.g. no capacity enhancement), provision for DR Ready specifications, passive provision will be made where appropriate. For these schemes, a DR Ready passive provision specification is assumed to not any add material cost. This is based on the following assumptions:

1. No change to train detection and therefore no need to design a separate ETCS compliant option
2. Competitive procurement arrangements embedding the DR Ready Specification from inception of the scheme
3. Support is given to the Routes by a core team (DR, STED and IP) to ensure a consistent interpretation of the specifications.

This is in line with the latest DR strategy, as set out in BRT's guidance documents and the DR short form strategy on the sharepoint site for RF06. There is only one renewal scheme planned for CP6, Edinburgh Waverley Control System renewal, where we may provide more than passive provision, and we are currently working with the Digital Railway team to understand whether there may be a business case for seeking incremental enhancement funding for a traffic management intervention aligned with this planned renewal.

5.2. Asset intervention strategy

5.2.1. Summary route asset strategy

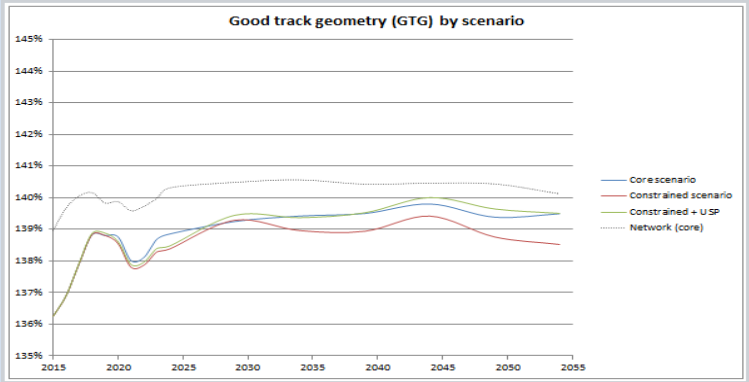
In order to deliver the Route's vision of "building the best railway Scotland has ever had" the network will need to be increasingly reliable and we have built an asset renewals plan to deliver this supported by individual asset intervention strategies. This plan reflects our understanding of where we are currently with asset performance and what our asset renewal and enhancement plans will deliver by the end of CP5, and the impact of this on performance and other outputs.

We aim to deliver increased resilience to extreme weather events, reducing disruption to the customers and increasing reliability, through enhanced lineside maintenance and targeted renewals, it is aimed at reducing incidents of line closures and restrictions, as well as reducing recovery time.

Asset Area	Intervention Strategy
Track  	*TheTrack plan is asset condition-led, based on current enhanced asset data (available from recent introduction of train borne measuring equipment such as Eddy Current, side wear measurement and ballast fouling) with areas of concern (e.g. Rolling Contact Fatigue) addressed on a risk-based approach with interventions phased between control periods.* *The plan maintains our CP5 policy of using larger rail sections on WCML, ECML& E&G, with premium rail in high wear locations and coated rail in tunnels and level crossings with adopted road carriages. We aim to specify under sleeper pads as standard on all track renewal activities where re-sleepering is included. We have targeted an increased use of the milling train vice rerailing to achieve a direct reduction in re-railing activities.* *Track policy as introduced during CP5 requires an increase in OPEX activity on low criticality bands (e.g. Far North and West Highland lines) with renewals targeted to high criticality routes, refurbishment targeted to medium criticality and maintenance-only to low criticality routes. For CP6, the Route is reviewing the delivery strategy for both OPEX and CAPEX on these rural lines to optimise outputs.* *High Output delivery has been focussed to those routes where access is at a premium: the E&G, WCML & ECML where significant additional access would be required to deliver volumes with conventional techniques.* *Gauge interventions and the development of a strategy to meet the Scottish Gauge Requirement is considered in appendix D* *Our off-track capital plan includes additional provision for fencing compliance by end CP6.* *CP5 levels of refurbishment activities for slab track have been continued with the addition of drain train operation to mitigate slab-track deterioration (this is included in the OPEX submission).* *The outputs of this plan indicate that service affecting failures and CRI will remain broadly in line with CP5 projected exit, however the modelling indicates sustainability will be slightly adversely affected. Reliability improvements are expected to be driven by targeted maintenance activity, the AIP and developing use of train borne data.*

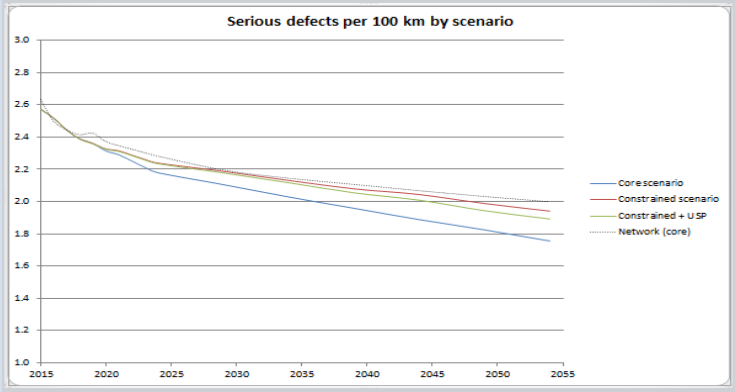
Our route specifications for complete S&C and plain line track renewals require the opportunity to improve route capability (contributing to immediate or future journey time improvements) to be considered.Our current plan for Carstairs Juntion is to renew and rationalise the junction in CP6 as well as addressing associated plain line and signalling issues, realising line speed improvements to cross border services as well as Scottish operators. Cause for consideration for enhancement funding to optimise the outputs is being developed.

The charts below are modelled on the 2017 route submission.



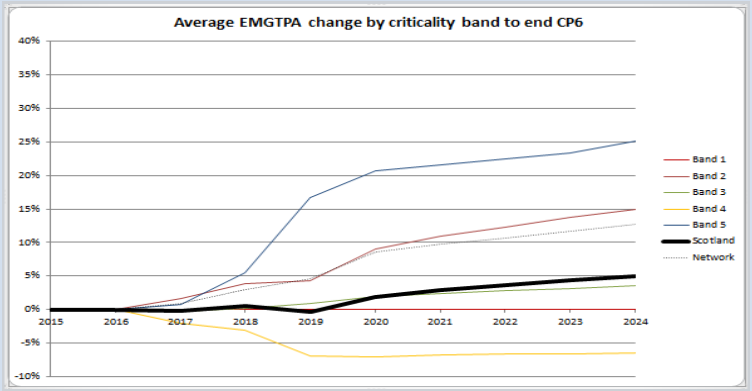
*The proposed track renewal programme **will maintain** very similar good track quality levels at the end of CP6 to CP5 exit levels.*

The constrained + USP (Under sleeper Pad) model Scotland has used, is designed to improve track condition and performance in high criticality routes to retain track performance and improve S&C condition, while retaining overall forecasted track condition at the end of CP5 to the end of CP6 for the route.



*Over CP6 the number of track related serious rail defects **will reduce** by 0.1%. This improvement is a result of continuing focus on rail renewal especially for locations with featuring Pre-1976 rail, RCF and sidewear.*

The Constrained + USP Model used aims to reduce serious rail defects on all lines to reduce derailment risk.



Over CP6 Scotland route will experience on average a 5% increase in traffic volumes (Based on EMGTPA, Equivalent Gross Million Tonnes Per Annum).

With Criticality band 5 (Mainly Highland Main Line and Aberdeen to Inverness) experiencing some of the biggest increases in traffic, these locations will require significant component renewal (particularly rail) to maintain CP5 levels of service affecting failures.

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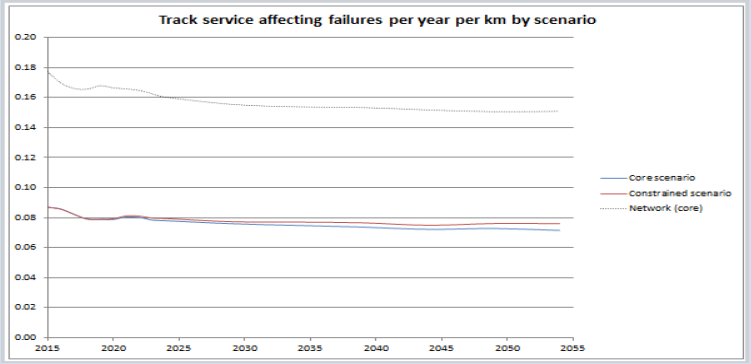

*In the face of increases in route usage the CP6 plan **will maintain** the CP5 levels of service affecting failures and track delay costs.*

The increased investment in rail renewal will allow this measure to be maintained for future control periods.

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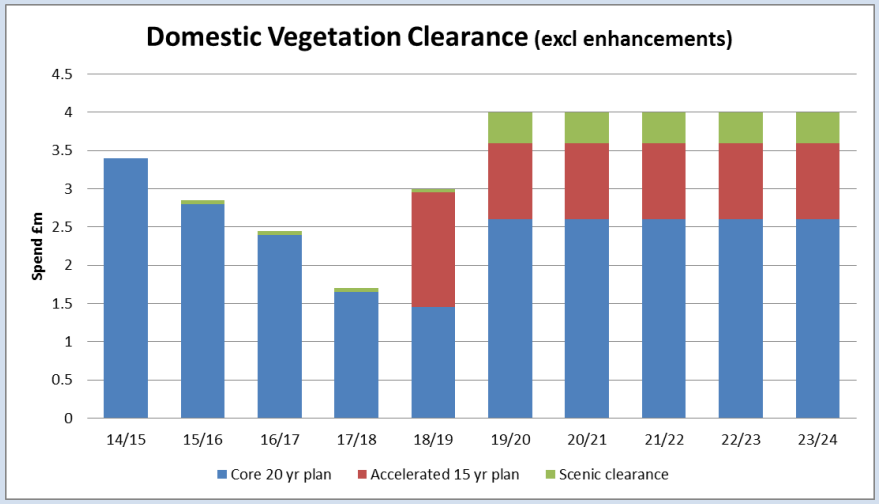
At circa 14 miles, Scotland route has one of the biggest concentrations of slab track on the network, situated at some of Scotland's most critical urban locations: North Electric and Argyle lines.

Significantly the majority of the slab was installed in a short window between the late 70's and early 80's and will require significant additional heavy maintenance or in some cases targeted renewal interventions during CP6 to prevent speeds and maintain PPM.

Vegetation management

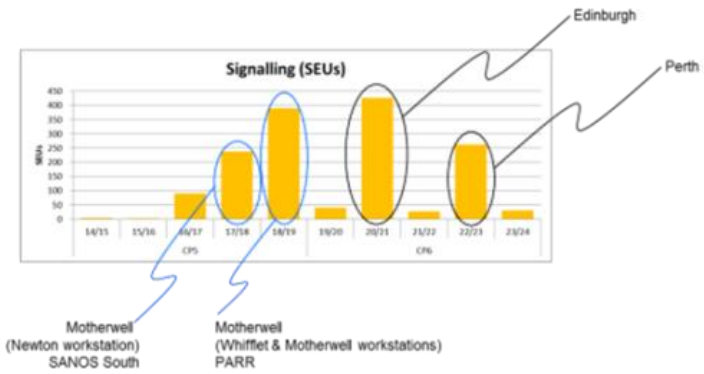
Our OPEX plans for major vegetation clearance are targeted towards achieving a policy compliant cleared lineside. As part of our CP6 plans we have sought to bring forward our initial compliance date of CP8 to CP7. This includes accelerating work into year 5 of CP5. This risk based core plan would not address sites on the West Highland Line and Far North where an aspiration has been expressed in the HLOS towards vegetation clearance to facilitate views from the train. We estimate full scenic vegetation clearance in Scotland as requiring circa £6m of expenditure but do not believe this is deliverable without impacting the risk based programme in CP6, with this in mind we have included for £2m of clearance directed towards scenic views as part of our core plan.Major vegetation clearance costs are illustrated in the graphic below. In addition to the costs of the major vegetation clearance, our plans include the maintenance costs of sustaining this cleared lineside.



Signalling and level crossings

The CP6 plan included in this submission is based upon the minimum renewals necessary to operate the railway based upon safety, regulatory compliance, asset condition and obsolescence risk. The plan is prioritised based on asset SICA score and may not sustain remaining life, however it is in line with a longer-term digital-based signalling strategy.

There are no schemes to specifically drive a reduction in signaller numbers however there are schemes where signal box closures are a by-product of re-signalling and re-control activities.



Edinburgh Control System Renewal will be carried out but to a targeted scope (3 classic IECCs only, newer IECC D retained), we will work with the Digital Railway team through the project development to assess if there is a business case for seeking additional DR funding for any digital intervention alongside this project.

Our level crossing strategy is to address older automatic crossings on higher speed lines and older AOCL+B crossings to improve reliability and reduce risk. The 10 highest-risk user worked crossings will be upgraded to MSL. The last two open road/rail crossings on the Scottish passenger network, Kildonan and Rogart, will be converted from open crossings to ABCL.

The plan aims to:

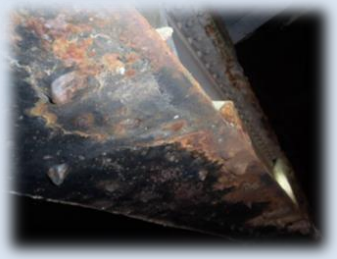
- Continue programme of life extension works – working towards future Digital Railway (DR) interventions.
- Address obsolescence issues by replacing key components
- Only full renewals undertaken where associated with enhancement schemes
- We will renew our oldest and poorest performing level crossing assets, upgrade crossings where risk is highest, and provide incremental safety upgrades where full renewal is not planned

Structures

The Structures plan has been developed to maintain the overall asset portfolio in steady state condition from the exit of CP5. This includes a significant increase in overbridge interventions compared with CP5 volumes, driven by asset condition and capability. Addressing weather resilience, the plan makes provision for the removal of all remaining higher risk scour sites by the end of 2023. The intervention strategy by asset type is as follows;

Coastal and Estuarial Defences - Historically, work on this group of assets has been carried out ad hoc and reactively following storm damage. For CP6 we have planned and prioritised works based on a systematic, risk based approach taking into account condition, route category, risk of overtopping and projected climate change effects.

Culverts - The replacement of poor condition fireclay culverts on steep sidelong ground on the West Highland Line as part of the WHL Culvert Strategy, applied in CP4 and CP5, will continue in CP6. There will also be a focus on remediating poor condition shallow depth stone slab culverts on RC 1 and 2 routes.



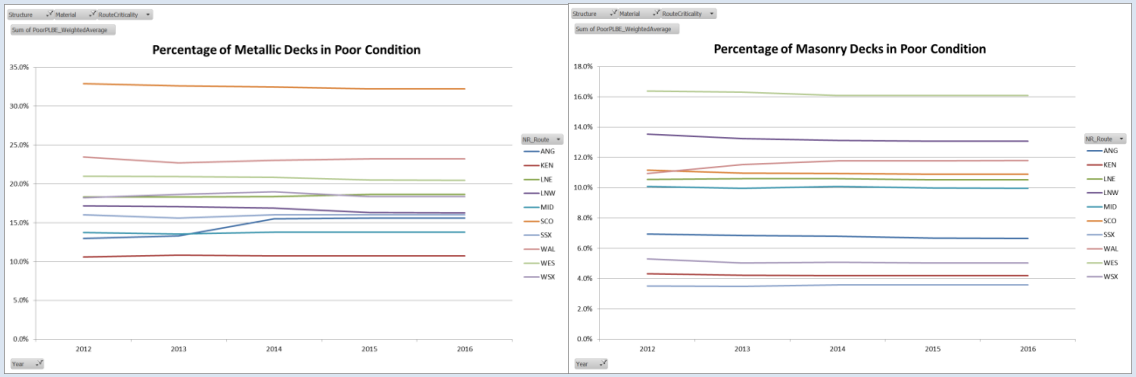
Footbridges - The proposed workbank has been developed from a review of each individual asset.

Major Structures - We are planning significant interventions on two of our three major structures in CP6, in accordance with the asset management plans for the structures. At New Clyde Bridge we plan to fully repaint the structure and carry out associated steelworks repairs. At the Forth Bridge, the programme of works includes repainting the north approach viaduct and also targeted repairs to deck troughing in conjunction with planned track waybeam renewals.

Overbridges - At CP5 intervention rates, our metallic overbridges are being repainted once in 150 years, which is unsustainable. By planning to paint 30 overbridges in CP6, we will lower this to 1 in 61 years. The remaining programme will be predominantly focussed on Bridgeguard 3 strengthening schemes.

Retaining Walls – We plan to increase the number of schemes in CP6 compared to CP5, based on the number of poor assets in this category within the route and as a result of a series of asset failures in the current and previous control periods.

Underbridges –CP6 will see a move towards less work on large multispan structures, and a greater proportion of planned work on smaller single span structures. This results from the completion of targeted works resulting from line of route metallic viaduct strategies and the masonry viaduct spandrel wall action plan. In addition there will be a greater proportion of work planned on metallic structures with a corresponding decrease on masonry structures. This is partly due to a change in heavy freight traffic (e.g. less coal traffic on GSW, where bridges are predominantly masonry) and due to the condition and risk profile within the asset portfolio. Scotland Route has the highest proportion of poor condition metallic decks nationally, whereas the proportion of poor condition masonry structures is less of an outlier (see graphs below), and the current repainting rate of 1 in 58 years is unsustainable.



The programme also includes remediation of all remaining high scour risk structures, as well as targeted interventions at other sites where scour defects are present.

Tunnels – The number of interventions on tunnels will be lower than in CP5. The CP5 programme included a significant number of schemes on unlined tunnels resulting from UTGRA assessments. The programme reflects what we believe is required to maintain the

	*average major element TCMI score at steady state during CP6. The programme is dominated by works in Anderston Tunnel to repair and paint poor condition metallic elements at Glasgow Cross, and remove spalling concrete encasement throughout the tunnel.* *Vehicle incursions - Remediation of all higher risk (risk score>90) non-public road vehicle incursion sites.* *Our route specifications for complete structures renewals will seek to progressively improve route capability.*
Drainage  	*The drainage volume delivered is expected to increase in CP6 partly due to the type of intervention mix required for earthwork improvements. The plan will further improve our knowledge of our drainage assets and increase weather resilience through tackling a number of specific risks such as side long ground. There will be a focus on undertaking track drainage intervention work at locations to improve track quality and remove the potential for speed restrictions.* ***Standalone drainage -** Completion of asset data improvement work commenced in CP5 (identification of all drainage assets, entry of asset details into corporate asset data systems and carryout first time inspections). Renewals to sustain condition of drainage assets not associated with track or earthworks asset renewals.* *Baseline plan includes targeted standalone drainage sites to improve the resilience of the railway to flood events. Target and reduce specific risks such as crest drainage on earthworks susceptible to adverse weather, drainage on sidelong ground and track drainage at poor track quality locations. The baseline plan also includes condition monitoring development for drainage (e.g. trash screen alarms, culvert blockage detection).* ***Flood Risk Management (Scotland) Act -** drainage capacity improvements as required by legislation under the Flood Risk Management (Scotland) Act at Potentially Vulnerable Areas (PVAs).* **Plan aims to:** Complete asset inventory (est. 5000 unknown assets) • Fully determine asset condition (45,000 unscored assets) • Continue high volume, low cost work to improve resilience to adverse weather Photographs illustrate successful drainage work completed in CP5.
Earthworks	*The plan will deliver the modelled volume of activities to sustain asset condition at CP5 exit levels. In addition the plan will achieve a reduction in the number of earthworks susceptible to adverse weather especially heavy rainfall.* *A significant focus of the plan is to achieve a marked reduction in the safety risk posed by landslips and rock fall including third party assets.*

There is an allowance to increase the use of technology to monitored earthworks assets using movement meters, fibre optic listening and CCTV systems.

The strategy is to continue policy driven work to sustainably manage asset condition. Workbanks have been prioritised on risk; targeting poor (D&E) rated slopes and reducing the overall number of embankments and cuttings susceptible to failure during adverse weather. Targeted work to improve resilience to adverse weather has been included in baseline plan. The Route will continue to develop monitoring and alerting technology through CP6 with further deployment of remote condition monitoring (RCM) and fibre optic rock-fall detection.

An allowance has been included to improve the flood resilience on Highland Main Line at Dalguise, where we suffer frequent repeat flooding events. Our intention is not to prevent flooding, but to limit damage caused to speed line reopening following incidents.

Plan aims to:

- *Sustain asset condition (1.8) – approximately 2% of asset portfolio renewed to offset degradation in condition (plus 3% refurb and 3% maintain)*
- *Sustain 5 year MAA of 20 failures per annum within in context of changing climate with wetter/warmer weather forecast*
- *Reduce number of adverse weather-susceptible sites to 100, each of which will have some form of condition monitoring in place*
- *Increase number of RCM assets*

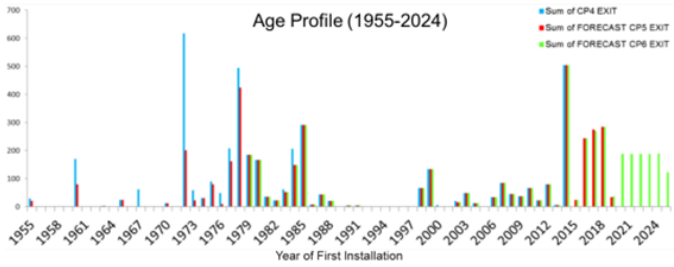
Electrical Power and Fixed Plant

The plan will maintain the overall asset condition as of exit CP5 and is policy compliant. Overall performance will be sustained with improvements through the targeted renewal interventions at poorer performing assets.

AC Traction Power Distribution – *the plan tackles obsolescence of equipment, with planned renewals of RTU outstation equipment and electronic distance protection relays. It is assumed that the National SCADA programme for the Route is delivered by the end of CP5.*

AC Overhead Line Equipment (OLE) – *the plan will enable the commencement of condition led mid-life refurbishments on the 1960s Mk 1 OLE. This work will free up spares to support the Route on the remaining Mk 1 equipment. The refurbishment programme of works will continue into CP8. High priority safety and performance related campaign change renewals will continue in CP6.*

Signalling Power Supplies (SPS) – *the plan will transform the age profile of the SPS asset base. This will result in approximately 40% of assets being renewed over CP5 and CP6. The Signalling power distribution assets have been historically renewed on failure rather than asset condition and age. This has led to significant impacts on train performance and potential safety risks. This plan will build on the improvement plan to improve the asset performance, through these SPS feeder renewals, plus the targeted 'patch and mend' cable renewals. In addition the plan will renew obsolete UPS systems and complete the SIN119 action plan.*



	Fixed Plant – *the plan will enable condition based renewal / refurbishments to be completed of the fixed plant equipment. Continuation of the roll out of Remote Condition Monitoring (RCM) for critical equipment, namely Principal Supply Points (PSP), compressors, flood telemetry and wind measurement to improve real-time asset information. This RCM programme will support the CP6 maintenance strategy for risk based maintenance.* ***Improving compliance, reducing electrical and other safety risks –*** *the plan has no significant provision for improving the compliance with the Electricity at Work Regulations and TSI legislation, i.e. single approach to electrical isolations and OLE electrical clearances. This is in line with the current guidance from the Professional Head who is developing the national Electrical Safety Delivery programme (ESD).*
Buildings  	*The Buildings workbank is based on condition led renewals only and does not target work to address correction of historical design issues such as HARP units and platform cross falls, these will be addressed when renewals are carried out. It has been based on risk and asset type with renewal of footbridges, canopies / trainsheds and platforms prioritised over interventions on access routes, car parks, waiting shelters etc.* *This reflects the risks associated with each asset type. Planed preventative and reactive maintenance allowance has been enhanced to reflect this approach. No overall improvement in the SSM or PARL scores is anticipated from the exit CP5 position.* *As per policy, with a strategy to correct non-standard construction platforms and cross falls through condition-led renewal programme and other project works. In line with central guidance, no provision has been made for an MDU Improvement Fund. Currently this is held centrally for CP5 and will be devolved for later submissions.* *Proposal in CP6 to enhance and renew station buildings and environment, improving customer and passenger experience.*

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5.2.2. Research and development

Through CP6 our intention is to continue to work with the central STE teams to support their R&D programmes, and we retain a particular interest in technology to record the underwater condition of our structures in real time. Aligned with this the Scotland team will also directly support Strathclyde University's NERC funded research into "Early warning decision support system for the management of underwater scour risk for road and railway bridges".

Through CP5 the Scotland route team has been developing a listening fibre system for identifying rock falls on the West Highland Line; our intention is to conclude this development such that it becomes integrated with railway operations in CP6

5.2.3. Weather resilience and climate change

Climate change presents us with an unprecedented challenge to understand how shifts in temperature and rainfall will impact our network and to identify the actions we can take to proactively increase our weather resilience.

To meet the challenge we developed a CP5 Weather Resilience and Climate Change Adaptation (WRACCA) strategy that was based on

assessments of weather-related vulnerabilities, identification of root causes of historical performance impacts and an understanding of potential future impacts from regional climate change projections. Within this strategy we identified schemes for future control periods to tackle the predicted change in weather patterns and selected schemes have been included in this plan to target improving the network's resilience to extremes of weather. This includes standalone drainage solutions to reduce the impact of flood events and remediation of the poorest condition earthworks sites

Asset	Resilience Activity	Impact / Benefit
Geotechnical 	*Targeting poor (D&E) classified slopes and reducing the overall number of earthworks susceptible to failure as a result of extreme rainfall.* *Roll out of additional mitigation including remote condition monitoring & fibre optic rock fall detection.*	*Reduced failures resulting in better performance and reduced safety risk (passenger and workforce).* *Proactive interventions reducing performance and safety impacts as well as driving more efficient focused expenditure.*
Structures 	*Replacement of two culverts and one underbridge (UB 070/021 Niddrie Burn) which has a history of flooding incidents.* *Remediation of all remaining high scour risk sites as well as targeted interventions at other sites with minor scour defects present.* *Additional OPEX to facilitate increased number of planned underwater examinations, resulting from a post incident review of Lamington failure. Includes provision for reactive underwater and coastal & estuarial defence (CERD) examinations following adverse weather events.* *Repairs to 10 CERD defences, where current rate of degradation requires intervention in CP6.*	*Reduced flooding and reduction in performance risk.* *Reduction in safety and performance risks.* *Reduction in safety risk.* *Reduced risk of washout of the line and line closure during coastal storms.*
Track and off-track 	*Continued investment in track drainage.* *Drainage capacity improvements as required by legislation under the Flood Risk Management (Scotland) Act at potentially vulnerable areas (PVAs).* *Acceleration of the vegetation removal programme.*	*Maintain current levels of service affecting failures.* *Reduction in safety and performance risks.* *Reduction in safety and performance risks.*

Electrical Power  	*Continuation of remote condition monitoring rollout, flood telemetry and wind measurement to improve real-time asset information.* *Feasibility study into weather resilience improvement works for sites including Craigendoran and Ardmore.* *Targeted maintenance at high risk weather sites through application of risk based maintenance e.g. Saltcoats for tasks including high level maintenance of wire runs and insulator cleaning.* *Ongoing review of flooding sites to assess business case for installation of fixed plant equipment (pumps) to manage risk of flooding events.* *Continued roll out of UPS / back-up generator fitment to allow equipment to remain operational during periods of DNO outage.*	*Proactive interventions reducing performance and safety impacts.* *Installation of additional catenary supports increases resilience to effects of high winds and minimises risk of blow off resulting in de-wirement, which would result in compromises to safety, performance and reputation.* *Recognition that high risks sites deteriorates at a faster rate than normal, increased maintenance activity enables asset condition and integrity to be kept at appropriate levels to minimise the risk of incidents occurring.* *Infrastructure resilience to flooding improved which maintains integrity of track / signalling assets to allow unrestricted operation of trains during periods of exceptional rainfall.* *Extreme weather events often impact on the DNO network and can result in power outages across parts of the country. Fitment of UPS and generating equipment offers degree of redundancy to enable key assets to remain operational during power outages.*
Signalling 	*New lineside apparatus housings installed under renewals projects to be painted white ex-factory.* *DC track circuits to replace Aster type between Inverkeithing and Burntisland.* *Axle Counters to replace Aster type on Blair Atholl to Dalwhinnie.* *DC track circuits to replace Reed type on Shotts Line under MNSR / H2M Electrification.* *Continue to fit and maintain condition monitoring on critical assets through Intelligent Infrastructure System.*	*Reduced heating effect inside lineside equipment housings due to solar gain.* *Susceptibility to Lightning damage reduced.* *Susceptibility to Lightning damage reduced.* *Susceptibility to Lightning damage and low ballast resistance reduced.* *Use information to predict and prevent failures due to weather related issues such as low ballast resistance on track circuits due to ballast saturation / flooding and points going out of adjustment due to extremes of hot and cold.*
Buildings	*Inspection of all platform lighting columns for condition and excessive wind loading (signage, CCTV etc.) with renewal of lighting columns based on asset condition.* *Tactile Inspection of all architectural features extended to include*	*Reduced risk of column failure in high winds attributable to corrosion or overloading.* *Reduced safety risk by early identification of asset condition which*

	*chimneys and architectural features* *Introduction of polycarbonate glazing systems to station canopies.* *Planned preventative maintenance regime relating to drain and gutter cleaning and the de-icing of platforms are undertaken by ScotRail at Franchised stations and at Glasgow Central and Edinburgh Waverley by Network Rail. An additional regime is in place to check all downpipes prior to any heavy rain forecast.* *Electrical testing and inspection compliance is undertaken by ScotRail to properties forming part of the franchised estate, with Networkrail undertaking similar duties within the operational property estate.* *Following lessons learnt from the frost heave events circa 2011 which affected 90% of Scotland's platforms. Tactile studs are now specified in preference to concrete tactile slabs. New platforms should be of cross wall construction or similar in preference to mass fill.*	*may be affected by wind loading or frost jacking.* *Robust material resistant to impact damage and UV degradation during periods of inclement weather.* *Eliminates need for reactive response by Implementing a robust Planned Preventive Maintenance regime.* *Building weather reliance into our Mechanical and Electrical services.* *Long term benefit as both cross wall construction and tactile studs will perform better in any future frost heave event.*

5.3. Operational plan

5.3.1. Train performance strategy (linked to plans in appendix A)

The ScotRail Alliance Performance Strategy currently has a Performance Improvement Planning and Monitoring Governance in place which covers Network Rail Infrastructure and Operations, Fleet, Train Crew / Operations and Customer Experience / Station delay. Over the last 10 months, this along with twice daily conference calls focusing in detail on daily performance and Service recovery has delivered a 1.6% improvement in MAA. This governance strategy will continue for the remainder of CP5 and be carried forward into CP6.

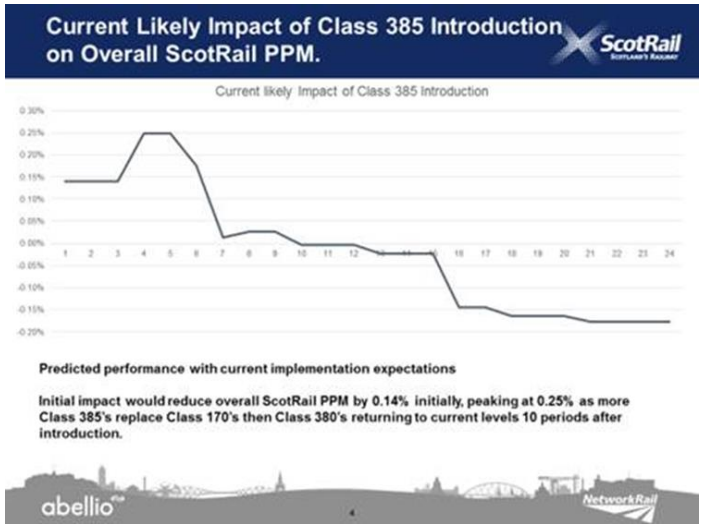
The franchise commitment to increase passenger journeys by the end of CP6 provides a challenge for performance, the link between increase passenger volumes and small delay has been demonstrated in many routes across the UK. The ScotRail Alliance has plans in place to increase capacity on key routes, with the roll out of EGIP electrification, HST rolling stock on the Highland lines, and the redeployment of the diesel fleet. Whilst this will go some way to mitigate the increase in passenger numbers, ensuring the resilience and reliability of our most congested areas will be critical to our delivery of 92.5% PPM.

The improvement planning process will focus specifically on these areas, both in terms of reliability improvements, ensuring robust maintenance periodicity and practice, roll out of RCM and efficient incident response. The roll out of a robust TRIP programme to ensure robust and compliant timetables in our most congested routes / locations, whilst meeting our funders' journey time aspirations is a further challenge that requires to be addressed as we understand in more detail future aspirations and funding available.

ScotRail performance plan

Since the introduction of the performance improvement plan in P7 of 16/17 ScotRail MAA improved by 1.6% to 91.2% (as of P6 17/18), although has subsequently reduced to an MAA of 90.4% at P10. The activity and performance governance under taken within the Alliance will continue into CP6 and beyond, underpinned by the continuation of the AIP funding through CP6 to address short term local performance issues and emerging risks.

An assessment has been undertaken on the likely impact of the introduction of the 385s and HSTs, whilst initial introduction will have a negative impact on PPM, analysis using previous new fleet introductions as a baseline, shows that this will be performance neutral by the end of CP5 and then contribute towards maintaining 92.5% PPM throughout CP6.
Graph showing predicted impact of the 385 introduction



Following the introduction of the 385s and HSTs the subsequent fleet cascade of electric units and 170s late CP5 into early CP6, as part of "revolution in rail" it is expected to manage the projected increase in passenger numbers through increased seating capacity to maintain a neutral impact on performance. There is an aspiration within the

Scottish Government to develop key performance indicators which reflects the impact of performance on current passenger experience, including at intermediate stations, and attractiveness of rail services to new passengers. We have the option to use the England and Wales CP6 metrics for "performance at all recorded station stops (by operator)" using either on time or PPM.

5.3.2. Route operations strategy

Our CP6 strategy will be based on a number of CP5 signal box migrations taking place from 2016 onwards, see below.

	Description	Implementation	Comments
CP5	WSSC - Ayr Workstation	2016	Upgraded to eMCS under trial project
CP5	Motherwell - Newton Workstation	2017	Closure of Motherwell SC panels
CP5	Nairn, Forres, Elgin	2017	Re controlled to Inverness as part of A2I project
CP5	Motherwell - Whifflet Workstation	2018	Closure of Motherwell SC panels
CP5	WSSC - Polmadie Workstation	2018	Workstation renewal to eMCS
CP5	Motherwell - Motherwell Workstation	2018	Closure of Motherwell SC panels
CP5	Greenhill Jcn, Larbert North, Carmuirs East, Grangemouth Jcn	2018	Closure of 4 boxes during SANOS/SDA Electrification

The table below outlines the signal boxes that are currently proposed to close or undertake migration of control or other modifications in CP6. These schemes are driven by condition and policy. Efficiencies have been assumed after factoring allowance for costs associated with the change. This table includes the associated costs for PTR&R. An allowance has been made in the route operating costs for the impact of electrification schemes on the staffing levels required at Electrical Control Room at Cathcart.

Scheme	Date of Commissioning	Estimated potential benefit (OPEX)
Revolution of Rail driving increased box opening hour (Inverkeilor SB, Greenloaning SB	Apr-18	£-1.3m over CP6
And Craigo SB)		
Motherwell - Carstairs Workstation	May-19	£1.0m over CP6
PTR&R costs associated to Box Closure Strategy (Motherwell SC transfer to WSSC)	May-19	£-0.6m over CP6
PTR&R costs associated to Box Closure Strategy (SANOS South CP5)	Dec-17	£-0.35m over CP6
PTR&R costs associated to Box Closure Strategy (A 2 I CP5)	Oct-17	£-0.1m over CP6
Dyce SB – Inverness SC	Aug-19	£0.74m over CP6
Inverurie SB – Inverness SC	Aug-19	£0.84m over CP6
Aviemore SB – Inverness SC	Aug-19	£1m over CP6
Pitlochry SB – Inverness SC	Aug-19	£0.90m over CP6
PTR&R costs associated to Box Closure Strategy (A 2 I CP6)	Aug-19	£-0.2m over CP6
WSSC - Paisley & Shields Workstations	Mar-20	£2.4m over CP6 (Includes training)
WSSC - Central & Bridge Street	Mar-20	£1.45m over CP6
WSSC - Polmadie & Cathcart Workstations	Mar-20	£1.45m over CP6
PTR&R costs associated to Box Closure Strategy (WSSC EST)	Mar-20	£-0.3m over CP6
Edinburgh IECC Signalling Control renewal	Mar-21	£3.140m over CP6 (Includes training)
Re-control of Cupar Signal Box	Dec-21	£0.35m over CP6 (Includes training)
Aberdeen Signal Centre transfer of control to Inverness Signal Centre	Mar-23	£0.23m over CP6 (Includes training)
Re-control of Barrhead Signal Box	Dec-23	£-0.1m over CP6 (Training Costs)
Re-control of Annan Signal Box	Dec-23	£-0.02m over CP6 (Training Costs)

5.3.3. Approach to resilience

Scotland Route Business will work with the community of BCM Leads across the business, to deliver and sustain the BCM framework throughout CP6.

Scotland Route is currently reviewing whether there are any short term quick wins to improve business continuity before the roll-out of an updated corporate business continuity strategy. Any funding requirements identified will be included in our SBP submission

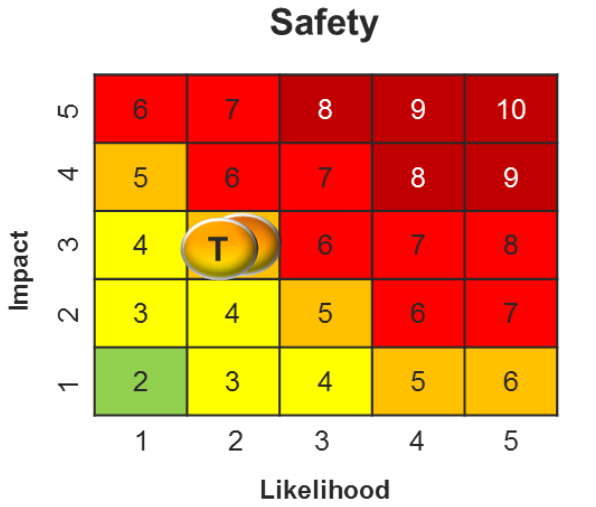
Resilience of the network in Scotland to extremes of weather is covered in section 4.2.3 above.

Network Rail has been invited to be a member of the 'Delivering Safe & Resilient Transport' working group, developing the updated National Transport Strategy. This will review the resilience of the Scottish transport network and propose future strategies.

A provision has been included within this plan to enhance security at our critical operational and public interface locations such as the West of Scotland Signalling Centre and at the two managed stations.

5.4. Output summary

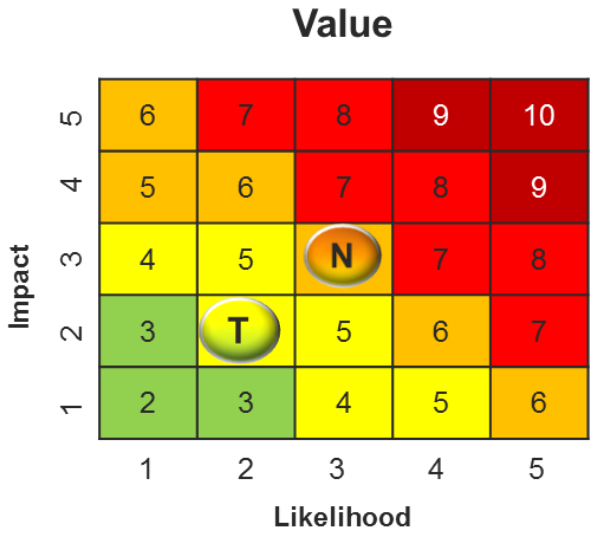
5.4.1. Risk



The biggest safety driver is the delivery of the core O, M & R plan, which for all assets has a strong bias towards sustaining safe infrastructure, where we plan to sustain the delivery of outputs between CP5 and CP6.

Placing a focus on weather resilience (e.g. scour mitigation and treatment of adverse weather sites, including further installation of RCM) is important in addressing passenger safety risk, particularly in the context of expected continued extreme weather events.

The plan reflects guidance from Buildings and EP Professional Heads on addressing safety and legislative risks in these assets.



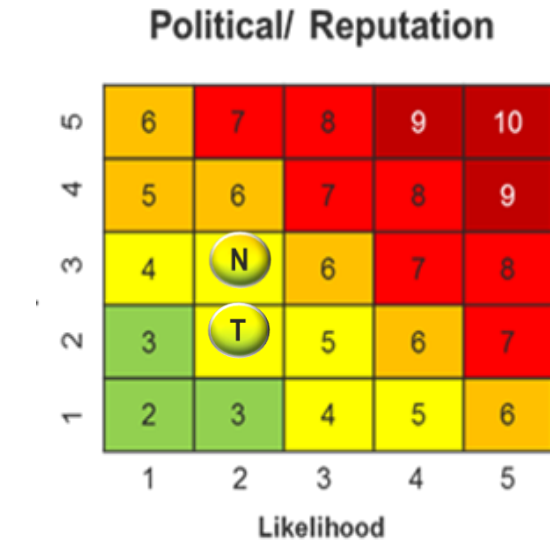
The gross value risk score reflects the fact that we will not meet the challenging final determination cost assumptions for track and signalling renewals in CP5.

Nevertheless, during CP5 there has been considerable focus on efficient means of delivery in Scotland, including workbank stability, the rollout of LEAN techniques, packaging of works and early contractor involvement, leading to some of the lowest unit rates in GB. The benefits of this approach have been embedded in the CP6 numbers. Demonstrating that these costs are efficient and setting them in our baseline should reduce this risk in CP6.

Other opportunities to mitigate this risk include reviewing access regimes and commercial strategies, and these are areas we will be reviewing prior to SBP submission. Challenges we will need to address include the impact of other Routes' delivery strategies and wider market forces such as major enhancements, and HS2.

The gross score shown here reflects our forecast CP5-exit position, and requires the delivery of our current performance improvement plan to address our current performance challenge and political and reputational position. We believe that our plans are sufficient to achieve this, and we will then aim to sustain this level of performance while supporting passenger growth through CP6 (net score).

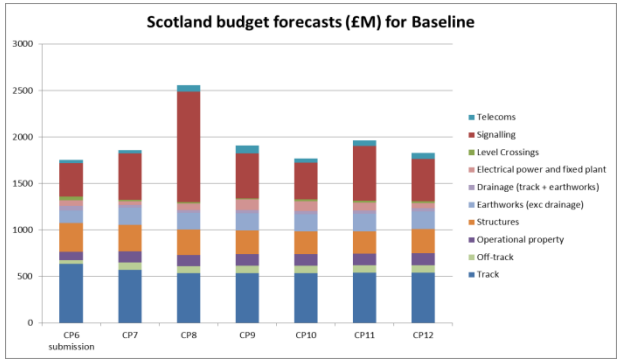
The plan aims to address the performance impact of weather events such as those seen in CP5 to-date, through reducing instances of disruption, and when they do occur, limiting their impact.



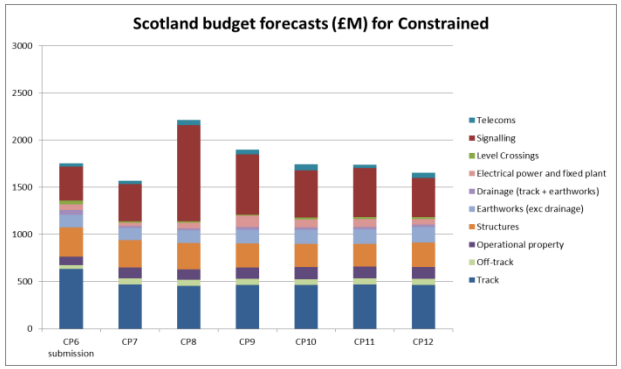
We are currently in a very challenging political environment with close scrutiny over the delivery of key enhancement projects and train performance. Implementing our enhancements and performance improvement plans should ease this by end-CP5 (gross score), and better clarity over costs and scope development for enhancement projects in CP6 should reduce the risk of similar challenges in CP6.

From a regulatory perspective, the proposed investment in further off-track maintenance and renewal addresses a primary concern of the safety regulator in Scotland.

5.4.2. Long run forecast



Baseline Expenditure -The models were run to identify the minimum assets renewals cost that were: a) compliant with policy; and b) retained asset condition and performance from the end of CP5 through future control periods.



Constrained Expenditure -The models were run with lower budgets limits (for example, set to either the RF6 total asset budget, 80% of the baseline or a minimum budget that kept the assets from becoming life expired). The total constrained scenario budget, across all assets, is close to the total CP6 submission budget, for all subsequent control periods

Modelled baseline scenario

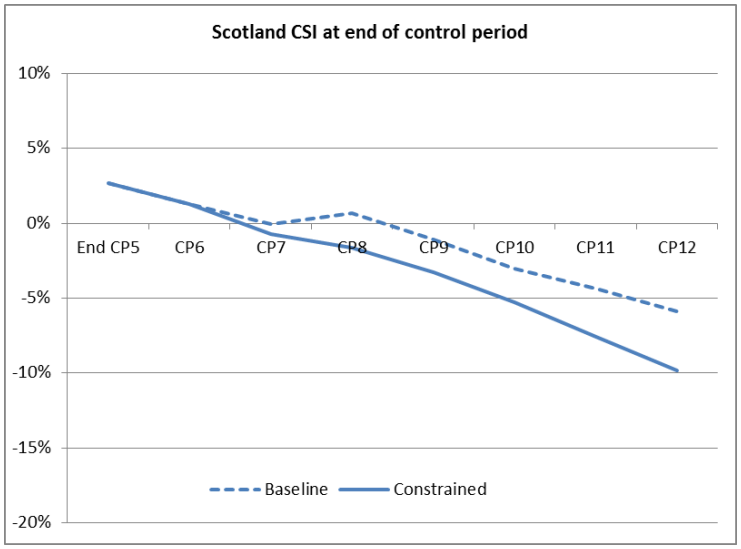
Scotland	CP6	CP7	CP8	CP9	CP10	CP11	CP12
Track	629	569	533	536	534	539	540
Signalling	357	501	1,192	484	393	590	453
Level Crossings	39	15	13	11	20	20	20
Operational property	95	120	116	126	128	128	128
Structures	310	289	276	255	245	239	261
Earthworks (exc drainage)	149	183	182	184	185	187	189
Electrical power and fixed plant	61	39	71	114	103	86	58
Off-track	41	79	79	79	79	79	79
Drainage (track + earthworks)	37	29	29	36	36	36	36
All assets	**1,720**	**1,824**	**2,491**	**1,825**	**1,723**	**1,904**	**1,764**

The following table describes the modelled impact of baseline and constrained expenditure on asset remaining life

Scenario	Expenditure	Average remaining life	Long term consequences and mitigation
1: Baseline expenditure	*Average control period expenditure is modelled at £1.98bn which is 10% higher than the CP6 baseline expenditure*	• *Average used life for Track (Plain Line, sleepers and S&C) drops by 1-2% exit CP5 to exit CP6 then increases by 7% by CP12.* • *OLE remaining life steadily drops from 60% exit CP5 to 38%in exit CP10 when it starts to recover due to Mk3 renewals in line with asset policy.* • *Signalling power supplies predict a small drop (-8%) in PARL from exit CP6 to exit CP8 then shows a steady improvement through to end CP11 (+18%)* • *SICA Signalling remaining years fall from 12.5 years in CP6 to 11.5 years in CP7 then steadily rising to 17yrs to exit CP11, however this doesn't take account of Digital railway introduction end CP7early CP8.* • *The output charts for structures only show the one scenario because the baseline forecast cost to maintain average condition and outputs is slightly less than the CP6 submission. UB % poor condition improves steadily from 15% in CP5 to 10% by CP12.*	*Over the seven periods the average expenditure is 10% higher than submitted for CP6 (@£1.98 av per CP except CP8 which peaks at £2.56bn. This is due to the impact age related signalling interlocking renewals; spend on all other assets remains broadly in line with CP6.* *Longer term asset condition deteriorates incrementally, especially track used life, and this could be mitigated by increased targeted renewals and workbank manipulation to address high used life assets or by the introduction of enhanced maintenance intervention.* *OLE reduction in remaining life is in line with asset policy that dictates major interventions at mid-life and whole life renewals.* *The impact of digital railway on signalling assets in the Route has not been factored into the model. This will remove the majority of on the ground signalling assets commencing CP7.*

2: Constrained expenditure	*Constrained expenditure is modelled at an average of £1.8bn which is marginally greater than the CP6 submission*	• *Under constrained expenditure the current model delivers a worsening of the track average used life modelled output (Plain Line, sleepers and S&C) of -11 to -14%* • *OLE remaining life steadily drops to 26%* • *SICA ends CP12 broadly in line with the baseline prediction of 15% remaining asset life fall to 4years by the end of CP12* • *Constraining the structures spend results in the reversal of the improving trend in CP6 to over 16% by CP12*	*The practical consequences of the asset remaining lives dropping to the levels under a constrained scenario will be a reduction in sustainability and a requirement for more maintenance interventions to maintain safety and reliability, especially on track assets on lower category routes.* *OLE reduction in remaining life is in line with asset policy that dictates major interventions at mid-life and whole life renewals.*

Overall the modelled impact of both the scenarios on the combined sustainability index (CSI) is shown in the graph opposite.



6. Customer focus & capacity strategy

6.1. Capacity & timetabling

The Scotland Route Study, which included a Market Study for flows wholly within Scotland, was published July 2016. This provides choices for funders for CP6 and beyond. The Route Study set out a 30 year strategy for the railway in Scotland, discussing the following challenges that the rail network in Scotland will face. The document presents strong passenger growth figures for all markets, particularly to the end of CP6:

Market Growth Overview	Growth Factor 2012-2023	Compound Annual Growth Rate 2012-2023	Growth Factor 2012-2043	Compound Annual Growth Rate 2023-2043
Edinburgh AM Commuter	0.56	0.041	1.14	0.016
Glasgow AM Commuter	0.47	0.036	1.08	0.018
Aberdeen AM Commuter	0.52	0.039	1.51	0.025
Interurban	1.56	0.041	2.06	0.014
Rural	0.6	0.044	1.54	0.03

6.2. Future capacity & growth

In February 2017 the Rail Delivery Group published the “Scotland’s rail infrastructure” document on behalf of Network Rail in Scotland and industry colleagues. The aim of this document is to support the Scottish Government and other funders in making decisions around the future of the railway. It recognises that there are ongoing changes and challenges to the industry, not least around project development and delivery, and sets out how the rail industry is working together and with government to address these issues.

The industry has used the document to inform discussion and engagement with the Scottish Government and the public about the outcomes it wants the railway to support in the future and the trade-offs that will be required to achieve them in a way which is both affordable and which delivers strong value-for-money. It sets out a number of areas that the industry will explore and work with government to support its strategic priorities. This informs Ministers’ High Level Output Specification and their Capital Investment Strategy, as well as their wider development of policies.

The content includes:

- Identifying opportunities for development and investment in areas and markets where

rail is best placed to support overarching government outcomes.
- Prioritising investment in those markets where rail has the potential to increase its market share significantly.
- Taking advantage of Network Rail's programme of renewals to minimise the cost of rail enhancement proposals.
- Identifying potential constraints and trade-offs that are likely to exist on the network.
- Aligning strategic choices in an ongoing planning framework that delivers affordable outcomes and makes best use of resources
- Preparing for likely developments in cross-border services following the opening of HS2

In the HLOS a new approach to specifying capital rail investment and release of funds through a Rail Enhancements & Capital Investment Strategy (the Investment Strategy) has been outlined. This strategic approach will seek to maximise any opportunity to improve rail services where greater network wide benefits could be delivered as part of a significant asset renewal projects through additional investment. CP6 Enhancement proposals will be drawn from a pipeline of potential schemes that satisfy the investment criteria set by the Scottish Ministers. Decisions on commitment to funding projects will be taken by the Scottish Ministers when business cases have been fully developed, consulted and value for money has been demonstrated. (HLOS 3.4-3.6)

Choices for funders 2019-2029			
East Coast Main Line Enhancement	· Prestonpans to Drem four-tracking		· Electrification of Maryhill Line
	· Dynamic Loops south of Drem		· Timetable amendments Glasgow Queen Street
			· Train lengthening Glasgow Low Level corridors
			· Train lengthening Ayrshire and Inverclyde
			· Electrification and enhancement to East Kilbride / Barrhead
			· Electrification and enhancement to Kilmarnock / Barassie
			· Glasgow Central High Level Station Enhancement
Edinburgh Waverley Enhancement	· Edinburgh Waverley platform extensions	Greenhill Junction Grade Separation	
	· Edinburgh Waverley Western approach enhancements		
	· Edinburgh Waverley Eastern approach enhancements		
Train Lengthening Fife to Edinburgh Waverley		Dunblane to Perth Corridor Enhancement	
Edinburgh Suburban Enhancement Programme		Central Belt to Inverness Enhancement	
Gauge Enhancement	· West Coast Main Line to Grangemouth	Central Belt to Aberdeen Enhancement	
	· Glasgow to Carlisle via Dumfries		
High Speed Enabling Projects		Far North Line Enhancement	

Most of the Enhancement options above are based on output assumption such as increases in service frequency or journey time reduction. These options will be further developed to determine more details of the asset interventions that may be required.

6.3. Digital Railway

Scotland currently has no planned digital railway interventions in CP6. We are currently working with the Digital Railway team to understand whether there may be a business case for seeking incremental enhancement funding for a traffic management intervention aligned with the planned control system renewal at Edinburgh.

6.4. Communications (NRT)

The route and NRT look to cooperate fully with Transport Scotland and the Scottish Government to examine areas where Network Rail's digital assets can support passenger services where digital connectivity is limited or currently missing, or where the assets can support digital coverage for remote and rural communities.

- Plans concentrated to address concerns with aging telecoms equipment and power supplies to support route assets
- Costs allocated across all SISS assets in Scotland Route and a reactive minor works budget allowance included for cable and route renewals
- Plans targeted at level crossing improvements, telephone concentrators/voice recorders. Some limited budget on DOO assets
- Significant budget evenly allocated on PA/PAVA, CIS and CCTV

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	

6.5. Property

The Route works collaboratively with Property and requires strategic property and town planning advice together with associated property acquisitions and transactions to support the delivery of operational maintenance, renewals and enhancements on the Scotland Route, currently with particular support and emphasis on:

- Edinburgh to Glasgow Improvement Project
- Aberdeen to Inverness Improvement Project
- Shotts line and other Electrification Projects
- Close out actions relating to Borders Railway and Airdrie to Bathgate projects
- A9 Duelling and Highland Main Line
- Development of freight facilities
- Maintenance and Renewal business as usual projects
- Office strategy with reference to Alliance ambitions.

Continued focus 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 lead to joint planning around the delivery of projects via Transport & Works Scotland Act Orders, Private Member Bills or other agreed delivery methodologies where appropriate. The Route will work with Property to realise the ambitions and spirit of the recently published Scotland High Level Output Statement, specifically reference to property disposal and making best use of redundant or underused assets.

Land Strategies

We will look to 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. The Route, through the System Operator, and Sponsor teams, with the support of Property, will continue to build on the good record of the Scotland Route in attracting inward investment to the business (such as through developer contributions (e.g. Cala Homes East Lothian), S.75 contributions) making best use of relevant expertise and experience in commercial activities and initiatives particularly for station and network enhancements.

Examples include a joint Route/Property master plan which is proposed for Edinburgh Waverley station in conjunction with City of Edinburgh Council who have a special interest in the station as Planning Authority and a key landowner with influence on all four entrances to the station. The master plan will seek to address the major improvements that have been identified to meet forecast demand at the station.

The Route will work together with Property to identify adjacent land in 3rd party ownership that would improve the efficient management of the rail network, specifically targeting essential access points onto the railway or where known railway expansion ambitions could be realised.

Disposals and Income Generation

All sites being considered for disposal will be subject to early industry consultation in order that operational uses can be protected, and where possible, enhanced. The Route will work together with Property to dispose of land where it presents a liability to the Route (for example Hollandhurst Road, Coatbridge) to reduce costs.

The Route and Property teams will work collaboratively with Train and Freight Operators to look at joint initiatives where this benefits the industry through reduced costs, enhancing passengers experience or moving freight onto rail (existing projects include Glasgow Queen Street, Aberdeen and Dundee stations, Blackford Freight Facility). The Route/Property/Train Operators will work collaboratively to promote and support the re-use of redundant but protected buildings for community uses.

The Route in partnership with Property will continue to help support Property's sustainable growth model that generates income to reinvest and create a better railway for a better Britain. This will include increasing Commercial Estate (railway arch) income, Retail income at Glasgow Central and Edinburgh Waverley, passenger outcomes through hypothecated gains and working to generate income where developers seek to use or develop Network Rail land.

Work place management

Office accommodation will aim to adhere to the Government Property Unit targets of 8sq.m/FTE and agility ratio of 7 desks/10 FTE. This applies to the corporate estate but does not extend to Control Centres or Depots. By driving towards these targets, Network Rail will work it's corporate estate more efficiently and we plan to realise OPEX savings as a result.

There is no capital funding for work place management costs in the route plan, as these are included in central Network Rail costs.

7. Cost competiveness & delivery strategy

7.1. Summary route deliverability statement

In many areas, Scotland can be held up as best-practice for delivery in CP5, with some of the lowest national unit rates, and a strong track record in delivering planned enhancement and renewal works. We intend to build on this in CP6, addressing observed areas of weakness (such as high output productivity in midweek access), while building further improvements on the existing foundations (such as a stable, integrated enhancement and renewal programme, experience packaging works, and early contractor involvement). We have also invested across the route in building our Lean competence in CP5 and aim to exploit structured continuous improvement across all delivery activities through CP5 and CP6.

The key structural factor that will result in an increase in cost in CP6 is the increased extent of network electrification (+429 single track km's v CP5). Although there has been extensive access on these routes through CP5 to enable OLE construction, this has in most parts been incompatible with other works, which has left a catch-up in core renewals (e.g. track renewals) that will need to be undertaken in CP6 to support performance targets.

Scotland's Economic Strategy sets out the Scottish Government's plans to achieve a more productive, cohesive and fairer country Sustainable investment in Scotland's railways plays a key role in achieving this and the deliverability plan will focus on delivery in Scotland through utilising available businesses, industries, markets, services and educational and social facilities.

This plan aims to develop delivery strategies for maintenance and renewals programmes that deliver optimal, locally developed and delivered solutions, achieved by working with key industry partners including the ScotRail Alliance. This will focus on the client and sponsor capability based in Scotland, and where appropriate the development of local policies and programmes with sufficient plant and staff for delivery allocated to and normally based in Scotland.

7.2. Access

CP5 renewals access has seen a mixture of conventional midweek and weekend delivery as well as more significant blockades where there can be demonstrated to be best industry value. More recently, extended rules of the Route have been used to support our enhancement projects.

For CP6, our intended access strategy will be developed from the existing Route Access Framework document. This will be expanded to align our plans with the renewal and maintenance work banks to glean the maximum synergies possible.

We will seek to develop line of route access strategies that provide certainty of access for customers and our delivery teams by agreeing a control period access plan that meet the needs of our maintenance and renewal teams. This approach will also enable our freight and passenger customers to unlock further market opportunities. Our access planning strategy will also take account of how passenger handling will be dealt with as well as freight requirements and availability of suitable gauge cleared diversionary routes.

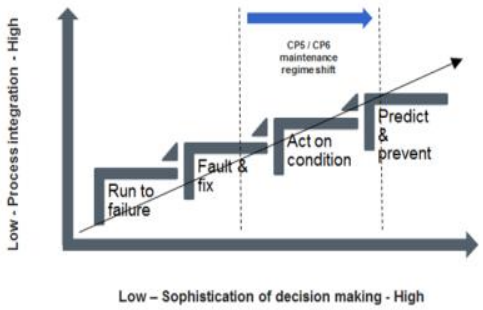
The access plan will have Route Asset track and civils renewals as the back bone and will be supplemented with the needs of other required renewals and maintenance. This will be underpinned with a focus on aligning customer demand and access strategies to efficiently and effectively improve delivery methods and patterns.

Enhancements delivery for CP6 brings some planning challenges as Transport Scotland intends to proceed with a suit of options for delivery that can be called down as required. However, this will bring uncertainty and instability to the access plan and critical resource demands without this confirmed commitment. Where significant interventions are required, particularly with enhancement programmes, funders and the industry will need to consider the appropriate balance between longer blockades and frequent disruptive line closures that

best reflect the needs of passengers, freight customers and funders. Collaboration will be essential in understanding customer priorities for key passenger and freight flows, to ensure integrated key end-to-end flows are protected when engineering works are planned in CP6.

Having an 'industry cost approach' with the development of cohesive access strategies that balance continued provision of services to customers during the construction phase of major works will be essential. There will also be a focus on developing a strategy with the overall intent that at least one cross-border route between Edinburgh and / or Glasgow and London is available to timetabled passenger, sleeper and freight services without the need for change. This will become one of the key challenges in CP6 with the construction of HS2 and the impact on Caledonian Sleeper services during the Euston closures. In addition, it is expected both LNE and LNW Routes will be competing for the same Bank Holiday weekend access.

7.3. Maintenance delivery



The emerging theme of our CP6 maintenance strategy is to develop a shift towards a 'predict & prevent' ethos together with improved capability to manage the increasing risk from weather events. The path towards 'predict & prevent' has a fully embedded & informed risk based maintenance (RBM) regime acting as the foundation upon which improved maintenance interventions occur.

These interventions being driven by asset data from our expanding lineside condition monitoring and train-borne measurement systems. Our strategy grasps the opportunity to gather more accurate and real time asset condition data, reducing the natural variability derived from dependence on traditional human assessments and measurements.

This approach also reaches into how we seek to manage the risk from weather events, the effects of which can be severe on network availability.

Given the concerning nature of these risks, a significant increase in off track maintenance volumes have become an inherent part of our strategy.

Improved workforce safety is a key output from this strategy, reducing the need for staff to work lineside or on track (both planned and reactive). This in turn drives a need for less engineering access which supports the forecasted growth in traffic and the Route's our prohibition on unassisted red zone working.

Tangible operational safety benefit is realised from improved off track asset management. A significant increase in activity is planned for drainage, vegetation and fencing maintenance.

This will reduce the likelihood of incidents arising from subsidence, flooding, adhesion, OLE short circuit trips, signal sighting & collision and or derailment risk during storms. It also supports the reduction of risk from animal incursion & trespass.

7.4. Project delivery

Small refurbishments, reactive and emerging works with limited design and development work are typically delivered by the Route Works Delivery Organisation [WD] although some more sophisticated projects are now being delivered within the Signalling discipline in particular. This has achieved significant unit rate reduction against traditional delivery options. This is a multidiscipline organisation with a project management and direct labour capability supported by a pool of complimentary specialist suppliers. Whenever necessary, the Works Delivery Organisation can quickly and effectively be redeployed to support maintenance activities. Strategically, the Works Delivery Organisation will procure, manage and deliver all significant non-maintenance vegetation clearance activities across the Route.

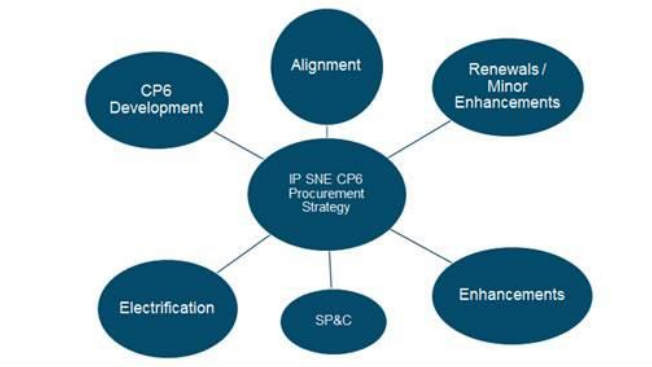
Infrastructure Projects [IP] will continue to be engaged for larger renewals and enhancement projects which normally have longer term delivery horizons, require complex delivery strategies and present more significant construction challenges. The Route, in conjunction with IP, is developing an efficient electrification technical strategy, using lessons learnt from the delivery of our new electrification projects in CP5 and applying these to the delivery of CP6 enhancements.

The proposed IP CP6 strategy has 2 core themes:

1. One Infrastructure Projects
2. Alignments with Routes / Works Delivery.

These themes will drive efficiency as we seek to align with the strategic objectives of IP whilst also working in a spirit of collaboration and cooperation with internal Network Rail resources with complimentary rather than conflicting procurement strategies.

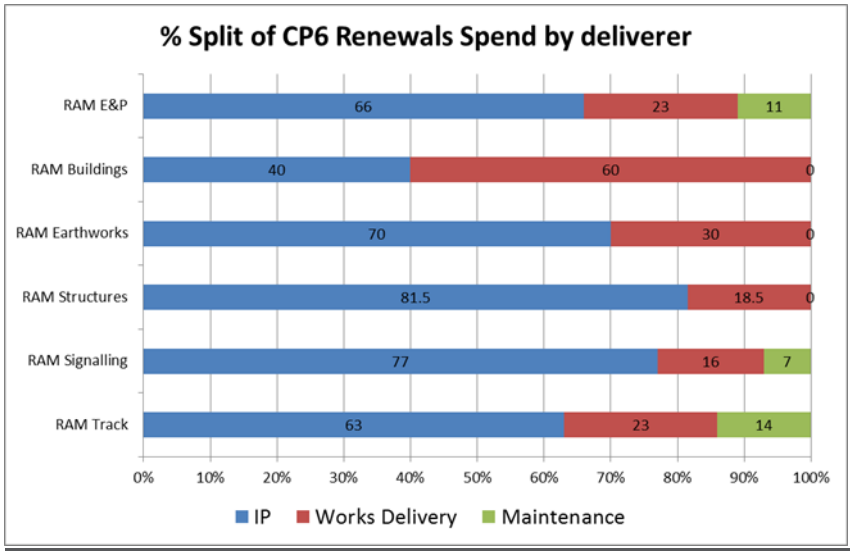
The proposed Strategy can be graphically represented in the 6 Dimension model below:



Acting as One Infrastructure Project organisation, delivering a co-ordinated procurement and delivery strategy. In working closely with the Route to ensure the delivery models for all projects are optimised utilising the strengths of all parts of the Network Rail business for safe and efficient project delivery. It is planned that all enabling works of a simple nature eg devegetation, drainage; lineside fencing etc will be delivered by Works Delivery working directly for IP. This approach to workload allocation will provide the most efficient use of resources and funds for Network Rail.

Delivery will be further optimised by through work bank packaging and the creation of steady work-banks, avoiding peaks and troughs in activity.

The following graph shows the approximate percentage of CP6 delivery between our major projects organisation (Infrastructure Projects or IP), our internal capital works delivery organisation and our maintenance organisation. The percentage is based on spend and reflects the work types discussed above.



7.5. Supply chain

Route Services – services offered to the Route
Route Services (RS) supplies services which 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), IT, Business Services and Contracts and Procurement (C&P).

We look to RS for subject matter expertise, access to their supply chain, and strong delivery partnerships with suppliers, to get the best value and quality possible for our Route. They are responding positively to our challenge to them to deliver the outstanding performance, cost competitiveness and commercial approach which we expect, as well as supporting Scotland in developing an increased focus on provision of locally based plant & resources.

In order to support our challenges and strategic priorities we involve RS in our Route Executive meeting, in weekly visualisation in order to review and improve service delivery performance and at periodic Track governance reviews. (see Appendix J for further details of RS plans including alignment and integration with the Route).

The Route will continue to work together with deliverers to establish contracting strategies that not only deliver the required outputs but also builds a sustainable supply base within the Route. Activities will be contracted in packages of compatible works, around a pre-agreed engineering access strategy. It is our aim to instruct a significant and meaningful part of the portfolio prior to the start of the control period, the intent being to support our supply chain in resourcing up for early delivery.
The remainder of the work bank, which can only be confirmed with the final determination, will be used as an incentive for driving continual improvement and realising efficiency opportunities.

Recognising the Scottish Government desire that significant rail investment funds should be deployed by Network Rail in a manner that supports sustainable economic growth in Scotland, the route has invested heavily through CP5 in the creation of an aggregate handling depot at Millerhill to the east of Edinburgh. This facility allows the route to locally process spent ballast which would normally be sent to either Kingsmoor (Carlisle) or Tyne Yard (Newcastle) for processing, reducing handling costs, the environmental impact of track renewals activities as well as developing the local economy.

The route is working with our High Output (HO) programme colleagues to further develop the capability of the site into a High Output Operations Base (HOOB) to support our CP6 HO operations, reducing the requirement for the HO train to transit to and from Tyne Yard at the end of each shift.

The route has reviewed overall delivery readiness using a format developed with the independent reporter (Nichols) The output of this review provides confidence of the deliverability of the early years of the CP6 plan and we will be using this assessment as an ongoing review of preparedness for CP6

Independent Reporter – PR18 Delivery Planning Review

DRAFT v0.2 - Assessment of Network Rail Deliverability Planning Process – Scotland Route, RSP, Status of RF2 (2017/18), May 2017

	Control Period 6																								
	Year 1 – 19/20					Year 2 – 20/21					Year 3 – 21/22					Year 4 – 22/23					Year 5 – 23/24				
Asset base	*Workbank Definition*	*Key Resources*	*Access Requirements*	*Cost Confidence*	*Delivery Agent*	*Workbank Definition*	*Key Resources*	*Access Requirements*	*Cost Confidence*	*Delivery Agent*	*Workbank Definition*	*Key Resources*	*Access Requirements*	*Cost Confidence*	*Delivery Agent*	*Workbank Definition*	*Key Resources*	*Access Requirements*	*Cost Confidence*	*Delivery Agent*	*Workbank Definition*	*Key Resources*	*Access Requirements*	*Cost Confidence*	*Delivery Agent*
Track	5	3	3	3	5	5	3	1	1	5	3	1	1	1	3	3	1	1	1	3	3	1	1	1	3
Signalling	5	3	5	3	5	5	3	5	3	5	3	1	3	1	3	3	1	1	1	3	3	1	1	1	3
E & P	5	5	3	5	5	5	5	3	5	5	3	5	3	3	3	3	3	3	3	3	3	3	3	3	3
Structures	5	5	5	3	5	3	5	3	3	5	3	5	3	1	5	1	3	1	1	5	1	3	1	1	5
Geotechnics	5	5	5	5	5	5	5	3	5	5	3	3	3	3	5	3	3	3	3	5	3	3	3	3	5
Buildings	5	5	5	3	5	5	5	3	3	5	3	5	3	3	3	3	5	3	3	3	3	5	3	3	3
Drainage & Off Track	5	5	5	5	5	5	5	3	5	5	3	3	3	3	5	3	3	3	3	5	3	3	3	3	5

7.6. Costing approach

In general asset groups, with the exception of Signalling, have based CP6 renewals costs on unit rates for schemes delivered in CP5. Signalling has applied Infrastructure Cost Model [ICM] output.

Asset	Supplier of cost	Basis of cost	% of asset covered
Track	IP Track & Works delivery	Historic delivered rates	100%
Signalling	Infrastructure Cost Model	Historic delivered rates	100%
Structures	Local IP delivery team	Historic delivered rates	90%
		First principles estimate	10%
Earthworks	Local IP delivery team & Works delivery	Historic delivered rates	100%
Drainage	IP Track & Works delivery	Historic delivered rates	100%
Buildings	Local IP delivery team & Works delivery	Historic delivered rates	100%
Electrification and Fixed Plant	Local IP delivery team & Works delivery	Historic delivered rates	100%

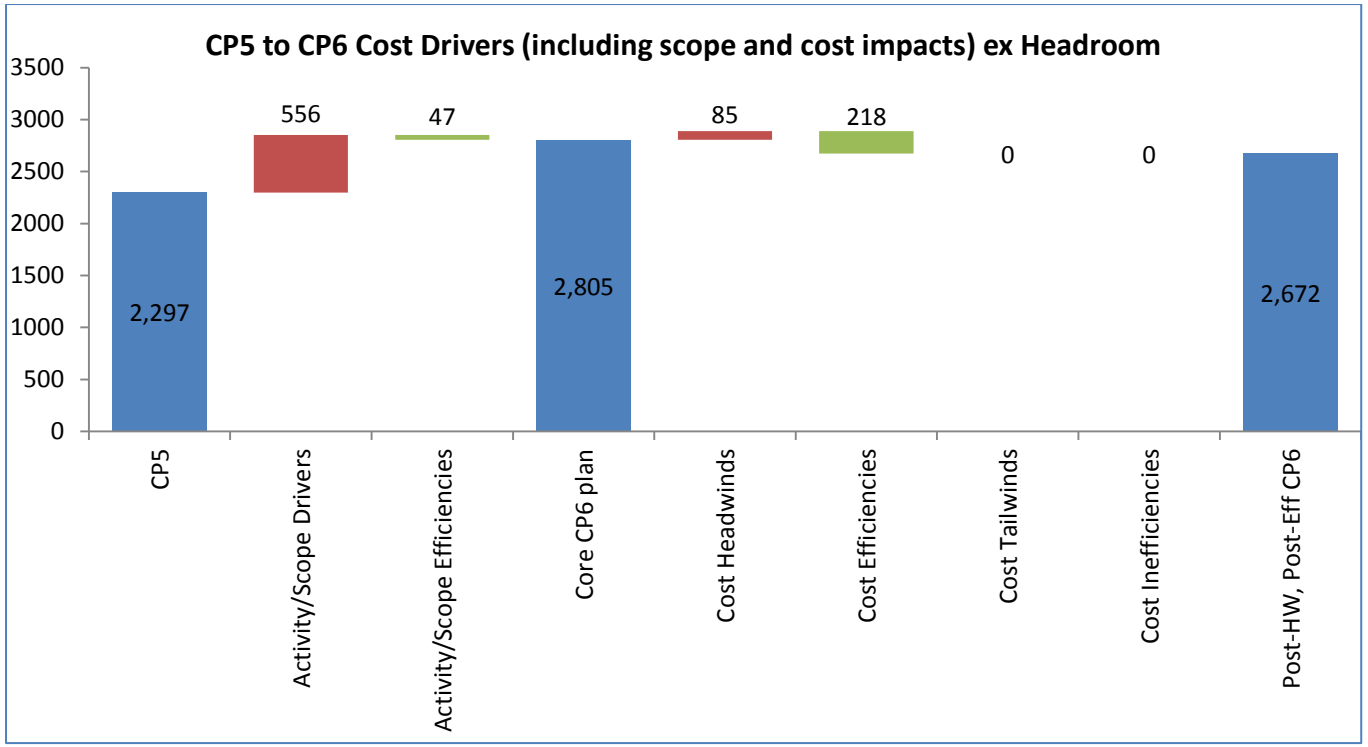
7.7. Cost Drivers, Headwinds and Efficiencies

7.7.1. Cost Drivers

Summary of factors driving total cost: CP5-CP6 Quantified scope drivers

Infrastructure changes summary

Driver	What has changed (Exit to Exit)		How the change will affect cost	Estimated CP5-CP6 change (£m)
Changes to network infrastructure: Track km	CP5	CP6	Approximately 24 km of new track installed as part of Aberdeen to Inverness Phase 1. No significant Track infrastructure changes have been allowed for within the RF2 submission. This is be subject to review following SOFA publication.	5
	2,091	2,115		
Changes to network infrastructure: Electrified Single Track km	CP5	CP6	In the later years of CP5 the new electrification has an impact on maintenance resource levels as well as an impact on the M & R activities on the network these are reflect in our OM&R plans. No increase in electrified network has been assumed in CP6, this will be subject to review following the publication of the Capital Investment Strategy	14.3
	2,091	2,091		
Changes to traffic: Total Train km	CP5	CP6	In the final year of CP5 there are significant passenger traffic increases due to the introduction of new electric trains and the introduction of the HST fleet. The impact of these changes on track maintenance particularly are expected to be experienced in CP6 No other significant traffic changes have been in CP6. This will be subject the traffic forecast review that will be part of the SBP.	13.6
	TBC	TBC		
Changes to traffic: EMGTPA km	CP5	CP6	As above for passenger services. No assumption has been included for additional maintenance costs related to a targeted 7.5% increase in freight tonnage. This will need to be developed further as growth plans are developed with the FNPO team.	Included in above
	TBC	TBC		



7.7.2. Headwinds and efficiencies

In preparing our cost forecasts for this plan we have considered the volume of work required, the current cost of undertaking the activity, and then applied 'headwinds' and 'efficiencies' to this. In addition to the Route delivered headwinds and efficiencies, the benefits of the two centrally delivered programmes, Intelligent Infrastructure (II) and Electrical Safety Delivery programme (ESD) have been included.

Headwinds are factors that are expected to lead to upward cost pressure in CP6. These include *known*, structural changes in our costs, for example the impact of increased electrification, which reduces available access times to undertake work, as well as requiring additional staff on site to isolate and earth the overhead line. Headwinds also include *forecast* cost increases where we have identified current increasing trends that we expect to increase in to CP6. An example of this is the increased costs incurred for land access associated with our works.

As we develop our plan our objective is to identify headwinds, quantify these and then seek to mitigate these, for example through the development of faster means of taking isolations in electrified areas.

Efficiencies are areas where we have identified potential ways for reducing the cost of undertaking activities. These may be initiatives that we already undertake, for example packaging of similar work items in to single contracts to maximise buying gains, that could be exploited further; or they may be entirely new initiatives that we are not yet ready to implement in CP5, for example use of remote condition monitoring to intervene on our civils assets earlier.

As we develop our plan our objective with efficiencies is to identify opportunities, quantify, prioritise these and develop implementation plans to implement quickly and maximise the benefits.

In preparing our headwinds and efficiencies Scotland Route is working together with routes in England & Wales on a series of asset efficiencies groups to share best practice and peer review efficiency initiatives in support of a robust strategic business plan.

The following tables reflect the headwinds and efficiencies submitted in the O, M&R costs and volumes tables.

Summary of route efficiency ex Headroom

	Year			Year					
Totex (O,M,R)	**16/17**	**17/18**	**18/19**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**CP6 total**
Pre-efficient plan (£m)				**511**	**643**	**635**	**546**	**469**	**2805**
Activity/scope efficiencies (%)									
Core plan (£m)	**503**	**507**	**461**	**511**	**643**	**635**	**546**	**469**	**2805**
Head winds (%)	0%	0%	0%	3%	3%	3%	3%	3%	3%
Efficiency (%)	0%	0%	0%	-4%	-7%	-9%	-9%	-10%	-8%
Tailwinds (%)									
Inefficiency (%)									
Post-HW, post-Eff spend (£m)	**503**	**507**	**461**	**504**	**621**	**595**	**516**	**436**	**2672**

Route headwinds and efficiency by theme

Theme	Area		Headwind £m	Efficiency £m	Net £m change	Net % change
Access	Renewals	Optimisation of access (use, agreement, planning)	6.57	-16.84	-10.278	-0.36%
	OM	Optimisation of access (use, agreement, planning)	1.6	-7.6	-6.000	-0.21%
Design	Renewals	Early contractor involvement, early scope definition, and use of minimum specification solutions	7.48	-39.11	-31.635	-1.12%
	OM	-	0	0	0.000	0.00%
Workbank planning	Renewals	Stable workbank	9.00	-14.56	-5.557	-0.20%
	OM	-	0	0	0.000	0.00%
Delivery	Renewals	Development of works delivery capabilities / LEAN (Right First Time delivery, Better Every Day, Structured Continuous Improvement)	14.98	-30.95	-15.970	-0.57%
	OM	NOS / ROC migration / Other operations Organisational restructure	14.7	-29.3	-14.600	-0.52%
Technology	Renewals	ESD benefits / Other innovation and technology benefits	0.00	-16.12	-16.118	-0.57%
	OM	II - Intelligent infrastructure / Eddie current / EBAK - ORBIS / ESD	0	-11.8	-11.800	-0.42%
Commercial	Renewals	Improved contracting strategies/rates (inc. packaging of works) / Supply Chain Operations initiatives	14.03	-37.56	-23.531	-0.83%
	OM	Improved contracting strategies / Packaging / Rates Supply chain organisation initiatives	1.7	-8.8	-7.100	-0.25%
Other	Renewals	-	0	0	0.000	0.00%
	OM	LEAN (Right first time delivery, better every day, structured continuous improvement)	15	-5.3	9.700	0.34%
			85.044	**-217.932**	-132.888	**-4.71%**

For further breakdown of headwind and efficiencies categories please refer to the renewals and opex cost and volume tables uploaded as part of this submission.

7.8. Risk and uncertainty in the CP6 plan

This section provides an explanation of the how we have built up our overall plan and sets out our estimate of the degree of financial uncertainty within this plan

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 2016/17 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 reduction (efficiencies/tailwinds), where there is a reasonable expectation they will occur, have been identified separately from the core CP6 plan.

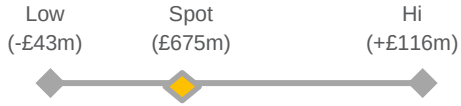
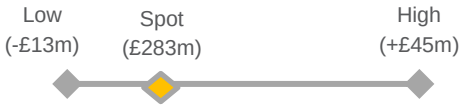
The combination of our core CP6 plan, headwinds/tailwinds and efficiencies/inefficiencies is our 'submission' and represents the 'most likely outcome' for CP6. The content of our plans reflect the funding that we understand to be available in CP6. We consider this plan to be realistic and, therefore,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

Whilst it is difficult to precisely estimate the likelihood of delivering our plan in CP6, it seems reasonable to suggest that; overall, there is a 45% to 55% likelihood of the outputs in the plan being delivered for the forecast cost in our CP6 plan. This means that there approximately half of the time, we will be able to deliver our plan for the forecast cost. However, this uncertainty varies between expenditure categories. For example, we consider that there is significantly more uncertainty in our renewals plan than in the support, operations and maintenance plans in CP6. The main drivers of uncertainty in our plan are identified in the table below.

Uncertainty ranges for CP6 (in development)

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 the uncertainty ranges. The information in this table is based on the detailed inputs provided in our opex, renewals and income submissions. Headwinds/tailwinds and efficiencies/inefficiencies 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		Track full renewal: due to impact of renegotiation of IP renewal contracts and impact of potential delay	-1% to 4%
		Track partial renewal: due to impact of renegotiation of IP renewal contracts and impact of potential delay	-2% to 5%
		Signalling Level Crossings, LC rates were unachieveable in CP5, due to factors including land purchase and appropriate renewals technology	0% to 6%
		Structures underbridges: Bottom up workbank development is demonstrating a reduction in overall volume due to change in mix of schemes from CP5 - this is the main risk to the robustness of IP rates used in budget developed. CP5 Unit rates based on CP5 work type mix, this has changed and unit rates likely to be greater.	-1% to 8%
		Earthworks: Re negotiation of frame work will result in unit rate increase as the current unit rates are well below national norms.	0% to 4%
Maintenance		ABP model accuracy has yet to be proven, risk of assumptions i.e. traffic growth and performance and resource availability	-67% to80%
		Plans to mitigate are in early stages and as enhancements progress greater clarity be gained and efficiency plans at early stage, with embryonic business cases and benefits analysis	-33% to 20%
Support and operations		Impact of any business continuity issues, inc IR & compulsory paid rest breaks.	-44% to73%
		Key issue is availability of ops training resources for signaller relocation and efficiencies reliant on delivery of signalling schemes resulting in head count reductions (inc compulsory redundancies and relocations)	-56% to 27%

Total expenditure	**Low (-£137m) Spot (£2679m) High (+£549m)** 		
Income	Low (-£xm) Spot (£xm) High (+£xm) 	In development	

8. Culture strategy

8.1. Safety

A relentless focus on workforce, passenger and public safety underpins the success of the ScotRail Alliance and we will continue to aim for our objective of 'Everyone Home Safe Every Day'. We will support the specific activities detailed in the Home Safe Plan and section 4 of this document with a strategy that combines personal leadership with broad employee engagement, though our leadership conferences, management visibility, and frontline engagement, both directly, and with our trade union safety representatives.

We will continue to focus on delivering public safety improvements through reducing level crossing risks and by engaging more with at risk local communities through safety programs and initiatives making our most vulnerable lineside neighbours a priority, with particular emphasis on exploring opportunities to reduce the level of suicides being committed on our infrastructure either through education or engineering controls.

We will continue to use close call reporting to engage our workforce in identifying and reporting issues, with an increasing focus on behavioural as well as condition-based reports.

The ScotRail Alliance also offers the opportunity to break down barriers to collaborative working between train operator and infrastructure owner, and we will seek to work together to improve overall system safety in Scotland.

8.2. Change

Our approach to change will align to the "Connecting Scotland" strategic plan and the Network Rail focus on driving efficiencies and be delivered through our inspired and enabled people. Underpinning change is our aim to improve our railway for our customers by working together as One Team under the ScotRail Alliance to provide a better service for those who use Scotland's railway. How this works is constantly evolving and we will seek to find opportunities to build synergies.

We will become an even more open, diverse and inclusive workplace that is seen as a great place to work with great people and where safety leadership is at the forefront of all that we do.

We are embedding lean principles through developing our expertise widely and the dedicated in-house team use structured continuous improvement as an enabler to deliver on-going efficiencies.

As we continue to devolve functions into Route Business Scotland we enhance the capacity and capability to react to the needs of the people living, working visiting and doing business with Scotland.

Strategies and governance to support change within Scotland's Railway (ScotRail Alliance) will include:-

- Senior Leadership Business Forum (G)
- Business Change Review panel (G)
- IR Strategy (S)
- Lean Programme (S)
- People Engagement Strategy (S)
- Strategic Workforce Planning

8.3. Organisational capability

Our strategy for organisational capability aims at attracting, developing and managing our talent across the alliance in order to close any identified short, medium and long term skill gaps within control period 5 (CP5) , and to ensure that we are well placed to meet the emerging challenges of CP6. Our aim is to

share best practice across the Alliance and work jointly, where it is sensible and beneficial to do so, to achieve common goals. Through Early Engagement, Emerging Talent and Career Development we will maximise our retention strategy, and through maximising Redeployment opportunities for our people we will leverage retention opportunities

Our strategy will recognise the demographics of our ageing workforce and challenging working environment whilst maintaining focus on our "everyone" strategy.

8.4. Social & environmental performance

8.4.1. Social

We are committed to being good citizens and contributing to the wellbeing of the communities we serve through effective use of social media channels, direct mail and face to face engagement; our policies support this engagement and we provide paid time off to encourage participation in voluntary activities.

Our diverse and inclusive workforce reflects Scotland's demographic and we are working hard to encourage engagement with underrepresented groups. We are open and transparent in our dealings with all communities and through the media and will seek to establish even greater engagement through new and existing channels.

We will continue to improve our suicide intervention plan which based on our close working with the Samaratins and Local Councils as well as condtinuing to identify and renmediate high risk sites and providing life saving intervention training.

8.4.2. Environment

Within the HLOS, Transport Scotland has outlined a number of key environment and sustainability requirements. These include working with the rail industry to develop and apply suitable KPIs for monitoring the impact and mitigation of climate change on the network, achieving a reduction in energy use and carbon emissions and delivering enhanced network resilience. Key activities we intend to undertake in support of Scottish Ministers' priorities include:

- Developing environmental and energy management systems and plans in alignment with international standards (ISO14000&ISO 50001).
- The recruitment (in CP5) of a new energy manager post to deliver and continuously improve the route's energy management plan, monitor and report progress, prepare business cases for energy efficiency investment and align the route to international standards.
- Update our weather resilience and climate change adaptation plan.
- Introduce new metrics for reporting carbon emissions and impact of climate change on the network.

8.5. Diversity & inclusion

We are committed to delivering our "Everyone Strategy" to create a more open diverse and inclusive working environment.

Our key priorities to achieve the vision include:

- Enhanced Collaborative working - Alliance / Other Customers / Occupational Health / Early Engagement and our Employee networks, D&I Champions and Equality Representatives.
- Enhanced external partnership working. Glasgow Employers Diversity Forum; Scottish Union of Supported Employment; Trade Unions; Nil By Mouth; BAME; SAMH.
- Internal Communications Plan
- Continue with the roll out of our Education and Training Programme which includes Inclusive Leadership Programme and Everyone Programme both well underway

- D&I Data analysis – Understanding our profile and implement plans to address enhancing our diverse workforce.
- Through our corporate commitment to the 20/20 initiative we are working towards having a workforce that is 20% female, by 2020.
- In support of our D&I and workforce health agendas we will be seeking to invest in improved welfare facilities through the last year of CP5 and our CP6 plan takes into account additional operating costs to support these.

We will deliver 'the everyone journey' with the support of our D&I steering group and align to the key measures.

8.6. Quality

Quality

We recognise the Network Rail corporate strategy for Quality and are engaged in delivering it under the headings of Governance, Assurance and Improvement.

Governance

The Integrated Management Systems (IMS) programme is a companywide programme to deliver a single management system for Network Rail that is based on an agreed process architecture and ownership and accountabilities. The IMS will make it easier for employees to find and understand what is expected of them, and ensure that content is current, well managed and compliant with the applicable standards and legislation. The delivery of an IMS is recognised as a significant enabler for improving compliance, driving safety performance and delivering business improvement.

Delivery of the IMS will ensure that the route achieves compliance with ISO9001 (Quality), ISO14001 (Environment), OHSAS18001 (Safety) and ISO55001 (Asset Management) standards – achieving standards or performance for a management system

Assurance

We will use the RM3 model to define what excellence in risk management looks like and allow us to assure ourselves that our risk management approach is operating to an adequate standard, and we have a route map to help continuously improve towards excellence in health and safety management. The Route will deliver RM3 self-assessments as a basis of benchmarking maturity both within Network Rail and in wider industry, and will use the results of the self-assessment as the basis for improvement.

Network Rail operates a 3 level model for Assurance, where First Line or Supervisory assurance focusses on management of day to day operational risk and control activities (or self assurance), Second Line focuses on overall effectiveness of individual policy and controls, and Third Line is fully independent assurance of the overall control frameworks. With increasing levels of devolution, the Scotland Route will review and enhance the governance arrangements, so that the Route Leadership are assured that the 3 levels are operating, and the results of the assurance activity are properly considered and acted upon.

Improvement

We have a vision for improvement that is in line with the Network Rail Better Every Day programme. The Route has internal dedicated resources to facilitate problem solving across the business and the development of improvement plans. This is a key enabler in delivery of our cop6 efficiency plans. A core principle is the sharing of ideas and best practise across National groups.

The Route improvement programme has committed to the company wide objective of training 50% of its staff with business improvement skills, and this training is underpinned by improvement frameworks that will capture ideas and initiatives, prioritise and select them, and then manage the delivery and benefits in a structured way.

8.7. Information Technology

The Route will seek to align with the central IT strategy via the Business Aligned IT Strategy (BAIT) and see Route Service Information Technology (RSIT) as a partner. As CP6 evolves the reliance of IT will deepen and document sharing and collaboration will be a key driver for the control period enabling a deeper alliance with our customer base.

Document storage will evolve to support remote access and will be key to providing cloud based solutions to enable easier access to critical information around the clock.
Personal conferencing tools will continue to evolve which will enable the route to become more productive and safer by reducing the need for staff to travel.

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

9.1. Current and planned third party funding

The table below details Scotland Route's current and anticipated third party contribution towards enhancement projects in Control Period 5.

Any potential schemes for CP6 would require third party investment to proceed. No government funding can be assumed to be available.

Project	Sub-project	Committed/Obtained Third Party Funding
Edinburgh – Glasgow Improvements Programme	Reconstruction of OB 070/058, Redding Road	£1,713,660
	Reconstruction of OB 076/011, Hope Street	£235,000
	Reconstruction of OB 070/059, Livingston Terrace	£216,145
	Reconstruction of OB 070/123, Fountainwell Road	£727,628
	Reconstruction of OB 145/075, Cardowan Road	£345,240
	Reconstruction of OB 132/028. Carseview Road	£300,000
Stirling – Alloa – Dunblane Electrification	Reconstruction of OB 132/021 Kerse Road	-
Cornton Level Crossing Closure	Level Crossing Closure	-
Dunbar Down Platform	Car park extension	-
Barrhead South Station	New Station	-
Rannoch Timber Load Facility	Freight Facility	-
Stirling Station Enhancement Works	Station Improvements	-
Inverness Station Enhancement Works	Station Improvements	-
Falkirk High Station Car Park Extension	Station Improvements	-
Leuchars Car Park Extension	Station Improvements	-
Kilmarnock underpass refurbishment	Underpass Improvements	-
Blackford Freight Terminal	Freight Facility	-
Dalcross New Station	New Station	-

9.2. Capability & business development

In response to Shaw Report Recommendation 6 "to new sources of funding and financing", Network Rail aims to develop capability to secure incremental third party cash funding to support Network Rail priorities. Such cash funding excludes third party promoted and funded network enhancements with no financial benefit to Network Rail and direct government / Department for Transport funding.

Incremental cash funding contributions are those which are captured to support the following unfunded Network Rail priorities:

1. Enhancement projects re-planned for CP6 in Hendy Review.
2. Strategically important enhancement projects in CP6 which are not covered by the Hendy Review.
3. Projects which generate operating savings as well as benefits to a third party.

Within Scotland Route opportunities for cash funding for category I projects are likely to be limited. There is however, scope for category II and III projects across the Route. Potential third party funders within Scotland Route have been identified as:

- Local Authorities;
- Hitrans, Nestans, Tactran, Sestrans, Swestrans and SPT;
- Scottish Enterprise, Highland and Islands Enterprise;
- Train Operating Companies;
- Freight Operating Companies;
- Freight and Shipping companies;
- Utility providers;
- Adjacent Infrastructure Managers (e.g.Airports, Transport Scotland Roads);
- Industry bodies (e.g. RSSB);

- Private developers, both commercial and residential.

Recognising that there may be lower levels of funding available for enhancement projects within CP6, the Route aims to develop its capability in securing third party funding by appointing a Head of Route Business Development.

Reflecting the unique position in Scotland of the ScotRail Alliance, the Head of Route Business Development shall sit within the Route Sponsor team report to the Director of Project Sponsorship & Business Development. The Head of Route Business Development shall be responsible for developing and implementing detailed business development and corporate asset management strategies for the whole of Scotland Route with the objectives of growing third party cash funding contributions to both the Route enhancement and renewals budgets. In addition to the aforementioned, the Head of Business Development shall undertake the following tasks:

- Identifying third party funding opportunities in line with the above priorities throughout the Route and develop those opportunities that are viable and consistent with the company's corporate goals, and Route strategies, for implementation by the relevant projects.

- Research the available markets for third party funding opportunities, ensuring that they are appropriately targeted propositions as part of an overall third party funding strategy.

- Develop, implement and monitor common procedures, processes, standards of service and reporting across all projects with third party funding to ensure consistency is achieved. Achievement of consistency in standards, compliance with regulations and template funding agreements.

    - Lead on third party funding activities that require national coordination. Represent Scotland Route at a national level on third party funding discussions.

    - Liaise with System Operator colleagues to gain knowledge of forthcoming projects so that a programme for targeting third part funding opportunities can be developed at the early stages of a project life-cycle.
    - Provide professional guidance to Sponsor teams on standards and agreements so that the Sponsorship department achieves compliance with all relevant internal and external regulations.

9.3. Focus for third party involvement

Third party funding contributions are likely to be committed to Route projects through a variety of arrangements, such as:

- Third party contribution letters;
- Ring fenced third party funding requiring matched contributions;
- Third party funding for developments which meet Network Rail objectives unlocked by Network Rail funding provisions e.g. Level Crossing Funding;
- The funding of third parties to capture incremental "access for all" benefits into third party schemes;
- Joint funding/multi party arrangements.

Within Scotland Route we will seek to use emerging cost agreements as our preferred implementation contracts.

Opportunities for third party investment will focus on Local Authorities in the first instance. Collaborative and successful relationships with Local Authorities are key to a majority of railway enhancement schemes. In particular there are opportunities to align asset renewals and enhancement works to bridges with road authority schemes to unlock shared benefits and potentially reduce maintenance costs. This opportunity should be explored as part of the planned electrification of the Edinburgh Suburban Line, the electrification of the Barrhead/East Kilbride Lines and the potential electrification of the Dunblane – Perth Route in CP6. All opportunities must be aligned with overall Route and asset strategies.

At present Glasgow Region, and Aberdeen Region have city deals. City Deals are in development for the Edinburgh Region and the Tay Cities Region. Our Head of Business Development will liaise with the appropriate city deal teams and local authority contacts to investigate opportunities for third party funding and to put in place the appropriate upstream contracts to enable receipt of such funding.

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 the route and those that are allocated / attributed to the route.

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	8	6	7	7	7	7	**34**
Operations	50	52	50	49	49	49	**249**
Maintenance	111	137	135	134	135	134	**675**
Renewals	306	314	430	406	323	242	**1,715**
Enhancements	518	164	114	154	192	207	**831**
Schedule 4 & 8	18	19	22	24	23	19	**107**
Allocated / attributed expenditure							
Traction electricity	23	31	33	33	34	34	**165**
Industry costs and rates (including BTP)	33	35	35	35	44	44	**192**
System Operator	0	7	8	9	8	7	**40**
Support and operations	38	50	52	48	48	47	**245**
Schedule 4 & 8	5	4	4	4	4	4	**18**
Renewals	89	72	92	81	59	49	**353**
Group Portfolio Fund	0	34	42	63	63	79	**281**
Non-SoFA expenditure							
Financing costs	157	146	124	105	83	69	**526**
Corporation tax	0	32	49	38	16	18	**153**
Total expenditure	**1,356**	**1,102**	**1,195**	**1,190**	**1,086**	**1,009**	**5,583**

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.

Table 10.2: Total CP6 Scotland income

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Variable and station charges	(57)	(34)	(34)	(34)	(34)	(34)	**(170)**
EC4T	(23)	(31)	(33)	(33)	(34)	(34)	**(165)**
Schedule 4 ACS	(10)	(21)	(24)	(27)	(25)	(22)	**(119)**
FTAC / Network Grant (SOMR)	(443)	(558)	(686)	(669)	(580)	(511)	**(3,004)**
Grant for tax and financing costs*	(157)	(177)	(173)	(142)	(99)	(88)	**(679)**
Income from FNPO *(charges)*	0	(4)	(4)	(4)	(4)	(5)	**(21)**
Income from FNPO *(FTAC / Network Grant)***	0	(81)	(95)	(94)	(85)	(76)	**(431)**
Other single till income	(28)	(35)	(35)	(35)	(36)	(36)	**(176)**
Subtotal (gross revenue requirement)	**(718)**	**(941)**	**(1,084)**	**(1,039)**	**(897)**	**(805)**	**(4,766)**
Capital grant for enhancements	(22)	(164)	(114)	(154)	(192)	(207)	**(831)**
Total income	**(740)**	**(1,105)**	**(1,197)**	**(1,193)**	**(1,089)**	**(1,012)**	**(5,597)**

***** *Corporation tax and financing costs will be funded outside of SoFA funding but we have included them in our forecast of income for completeness. This includes an allocation of these costs to the FNPO route of £73m.*

*** Includes income, which covers Scotland's share (£14m) of the FNPO route's own costs (not shown in Table 10.1).*

Following the creation of the FNPO route in April 2017, Network Rail's CP6 plan separately identifies the fully allocated costs and income of the FNPO route. Therefore, the expenditure in Table 10.1 does not

include the costs of FNPO activities in Scotland. However, reflecting the separate funding arrangements for Scotland (through Transport Scotland), in Table 10.2 we have included an additional £14m of funding for FNPO activities related to Scotland, which is not included in Table 10.1. This allows for a comparison of our plan to the Transport Scotland SoFA, which is included in Appendix E. Appendix E also includes breakdowns of access charges and other single till income are provided in Appendix E.

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 route revenue requirement.

Table 10.3: CP6 Scotland route revenue requirement

£m in 2017/18 prices	19/20	20/21	21/22	22/23	23/24	CP6
Route support, operations and maintenance	196	192	190	191	189	**958**
Allocated support and operations	50	52	48	48	47	**245**
Traction electricity, industry costs and rates (including BTP)	66	68	68	78	78	**357**
Schedule 4 & 8	23	25	28	26	23	**125**
System Operator	7	8	9	8	7	**40**
Group Portfolio Fund	34	42	63	63	79	**281**
Allowed return	146	124	105	83	69	**526**
Amortisation	386	522	487	381	292	**2,068**
Tax	32	49	38	16	18	**153**
Gross revenue requirement	**938**	**1,081**	**1,036**	**894**	**803**	**4,752**
Other single till income	(35)	(35)	(35)	(36)	(36)	**(176)**
Income from FNPO route	(98)	(116)	(111)	(98)	(88)	**(511)**
Net revenue requirement	**805**	**930**	**890**	**761**	**678**	**4,065**

Please note: *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.*

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

10.3. CP6 financial information

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

Table 10.4: Financial metrics for Scotland route

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Closing net debt	(5,029)	(4,044)	(3,456)	(2,682)	(2,357)	(2,066)	**(2,066)**
Closing RAB	7,135	7,161	7,161	7,161	7,161	7,161	**7,161**
Average net debt / RAB	70%	56%	48%	37%	33%	29%	**29%**
Group Portfolio Fund	0	34	42	63	63	79	**281**
Route	0	12	12	12	12	12	**59**
Portfolio	0	22	30	51	51	67	**222**
Maturing debt	0	898	532	720	302	274	**2,727**
Working capital	0	95	(40)	(1)	2	4	**60**
Cash requirement (incl. working capital and external debt repayment)	0	1,219	1,252	1,211	1,096	1,103	**5,881**

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).

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

11. Sign-off

This document and accompanying templates are owned by the Route/Alliance Managing Director (A/RMD).
Submission of this document indicates confirmation that:

- **all appropriate level 1 assurance activities have been undertaken (see separate advice on definition of level 1 assurance);**
- **the A/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:

Alex Hynes Managing Director, ScotRail Alliance	15/01/18
David Dickson Infrastructure Director, ScotRail Alliance	15/01/18
Ben Edwards Director Route Asset Management	15/01/18
Tom Greenan Route Finance Director	15/01/18
Kris Kinnear IP Deputy Regional Delivery Director	15/01/18

Appendix A Joint performance activity prioritisation by lead route TOC

This plan is 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
ScotRail PPM	**All Routes**	**91.2%**	92%	92.5%	93%	Amber	Exit CP5
ScotRail On Time Departures from Origin	**All Routes**	**85.4%**	85%	86.5%	88%	Amber	Exit CP5
Franchise Cancellations	**All Routes**	**0.9%**	1.6%	1.5%	1.4%	Amber	Exit CP5

No.	Key constraints, risks and opportunities	What we plan to do	Owner	Timescale
1	Franchise target to Increase passenger journeys by the end of CP6. Potential to increase small delay across the network.	a) Implementation of new and refurbished rolling stock to increase capacity on key routes.	ScotRail Alliance	Dec 2020
2	Impact on performance at key locations where there is a disproportionate impact on Performance.	a) Improvement plan focus on key locations which have highest impact on performance e.g. Hyndland – Partick, Winchburgh b) Robust incident response and service recovery, to improve DPI and monitored through twice daily performance calls c) Application of robust TRIP principles into the timetable.	ScotRail Alliance	Ongoing but will continue through CP6.
3	Transport Scotland Journey Time aspirations	On production of the Scotland HLOS we expect a greater understanding of Transport Scotland's aspirations on Network Rails impact on Journey Time, and the funding available to meet this.	Network Rail Scotland	September 2017

TOC sign off: A Miller

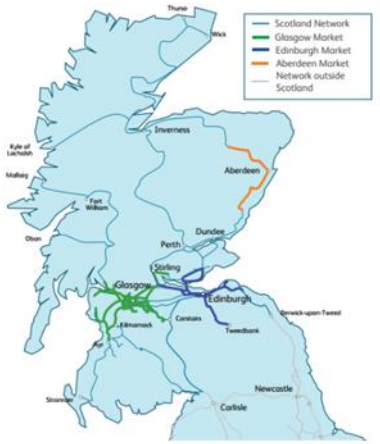
NR sign off: A Miller

Appendix B Key assumptions

1	The Abellio ScotRail PPM forecast for CP6 assumes that 92.5% MAA is achieved by the end of CP5. The PPM forecast has been caveated to note that the final delivery plan forecast will be informed by independent reviews currently underway of our performance plans.	OMR
2	This plan is consistent with the delivery of category one and two enhancement pipeline projects, but (with the exception of Carstairs) can be delivered independent of funding being agreed for these. For Carstairs, renewals funding is included within the plan, but an element of enhancement funding may be required to supplement this to deliver the scheme.	OMR
3	There are no material increases in Network Rail's responsibilities during CP6 (for example: increased security costs beyond those accounted for in the plan; increased responsibility for third-party land or property risk, e.g. resulting from the Loch Trieg court case, condition of adjacent private property at Ayr; third party costs/losses due to invasive species).	OMR
4	The plan assumes that revised commercial arrangements are in place to deliver the renewals workbank and specifically that new contracts for delivery of track renewals are in place for year one of the control period (assumed by August 2019).	R
5	CP5 enhancements will be delivered in line with the latest Enhancements Delivery Plan (as at RF6 2017).	OMR
6	Additional O&M costs associated with currently uncommitted enhancements (for example new CP6 electrification) are not included within the plan and it is assumed they will be varied in to the future plan when the enhancements are committed.	OM
7	Weather conditions in CP6 are not materially different to those experienced in CP5.	MR
8	Future legislative and policy changes, including changes to European regulations are cost neutral or reduce costs.	MR
9	Central NR functions continue to provide the same services to that provided in year 4 of CP5 unless there is explicit, recorded agreement for a change.	O
10	The revised Scottish Transport Strategy does not require an increase in OM&R expenditure during CP6.	OMR
11	Data quality is fit for the purpose of CP6 planning, and if unexpected volumes of work arise these can be contained through reprioritisation of the plan.	MR
12	Obsolescence is manageable in line with our obsolescence strategy as at February 2018.	MR
13	Structural failure due to presence of high alumina cement, as experienced during 2017 in a 1960s era overbridge on the Cathcart Circle, is not symptomatic of a wider population of structures requiring remediation in CP6.	R
14	The core plan does not assume further new train introductions beyond those planned in CP5.	O
15	The plan assumes that any costs relating to additional power supply capacity arising from traction power modelling works are funded as an enhancement.	R
16	Capital costs related to workplace management are included within the Property (not Route) CP6 submission.	R
17	The plan assumes the CP5 renewals as documented at RF6 2017 are delivered.	R
18	The plan makes no assumption on Digital Railway delivery, or technology availability in CP6.	R

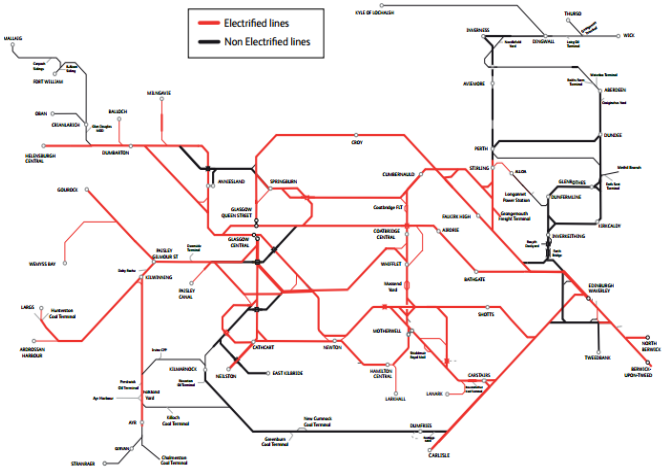
19	There is no upturn in coal traffic in CP6.	MR
20	The current ScotRail franchise continues through CP6, and that current alliancing arrangements between Abellio ScotRail and Network Rail continue for this period.	OMR
21	The level of funding included in the plan for early stage development of CP6 renewals is sufficient to allow for their efficient delivery on a standalone basis or integrated with CP6 enhancement projects.	R
22	The plan assumes any strengthening of the Queen Street Station barrel roof triggered by adjacent property developments, is funded by these developments or treated as an enhancement to be funded separately.	R
23	Existing rules of the route access arrangements are maintained	MR
24	We have not made any provision for the impact of new infrastructure schemes external to the railway, and any amendments to asset protection arrangements in response to the Hansford Review have been assumed to be self-funding.	OMR
25	Efficiency savings identified through productivity improvements can realise cost savings through appropriate redeployment of resource or cost-effective reduction in overhead.	OMR

Appendix C Route context



"*Scotland's railways are a national asset. They provide a vital public service to people and communities across the country and enable businesses to move goods and materials to markets. Our railways are a key part of the implementation of Scotland's Economic Strategy, supporting a resilient and growing economy through our four priority areas of investment: infrastructure, innovation, inclusive growth and international engagement*." (Humza Yousaf – Minister for Transport and the Islands)

The Scottish rail network is extensive and diverse and of a similar size to many independent rail systems in the smaller countries of Europe. With around 2,800 kilometres of track (25% of which is electrified) and 350 stations, the rail system includes the most heavily used commuter network in the UK outside London, as well as regional routes which provide lifeline connections to remote communities and promote tourism. It is a mixed-use railway with both rail passenger services and freight companies using the network.



The railway in Scotland has grown significantly. The number of passenger journeys has approximately doubled since 1998, and this growth has been supported by the Scottish Government's investment in new lines and infrastructure, new stations and new trains. Whilst rail freight in Scotland has been adversely affected by Scotland and the UK's move towards becoming a low carbon economy, the rail freight industry is working hard to develop new markets and new ways of supporting Scotland's economy.

Over the last decade there has been considerable investment in the Scottish rail network, with improvements to capacity and the opening of new lines such as Larkhall-Hamilton, Stirling-Alloa-Kincardine, Airdrie-Bathgate and the Borders Railway. A rolling programme of electrification on existing routes commenced in CP5 with the Edinburgh-Glasgow Improvement Programme (EGIP), followed by the Stirling, Dunblane, Alloa route and the Shotts line all due for completion by the end of CP5.

Appendix D Scenario planning

Part (1): Not used.

Part (2): Business cases for additional investment in CP6

- There are a number of areas in the Scottish HLOS where Scottish Ministers' aspirations may not be fully addressed in the core O,M&R plan described in this document. These areas are subject to further discussion with Transport Scotland, and further plan development with industry partners prior to the publication of the SBP and beyond. While the cost of these potential areas of investment cannot be quantified at present they are included below for completeness. It is envisaged that further investment in these areas would be subject to business case review and inclusion in the overall investment pipeline to be outlined in the Scottish Government's Capital Investment Strategy.

[Business case 1- Implementation of the 'Scottish Gauge Requirement']	**CP6 total: (£m)**	TBC	**CP6 capex: (£m)**		**CP6 opex: (£m)**		**Total BCR**		**Appraisal period**	30 years
Description	**Qualitative benefits**						**Quantitative benefits**			
The Scottish HLOS requires the implementation of a 'Scottish Gauge Requirement' through a continuous rolling programme to commence by April 2019 and to conclude by the end of CP6. The programme is intended to address structure gauging (excluding platforms), and includes passenger and freight elements. An industry workshop was undertaken on 02/11/2017 to develop the scope of the HLOS requirement. This has resulted in development work to be funded and undertaken in CP5. This will inform the scope of CP6 activity.	The simpler introduction of new rolling stock and cascade of rolling stock. The simpler planning of freight operations, and therefore support of freight growth aspirations.						Subject to business case development.			

[Business case 2 – Capital investment to support passenger journey time improvement and/or freight average speed improvements]	CP6 total: (£m)	TBC	CP6 capex: (£m)		CP6 opex: (£m)		Total BCR		Appraisal period	30 years
Description	**Qualitative benefits**						**Quantitative benefits**			
The Scottish HLOS requires that 'the outputs of the network be maintained in such a manner as to enable the operators of the ScotRail franchise to achieve improved journey times… set at 1.587 [minutes per mile] (Dec 2019) to 1.576 (Dec 2024)'; and that freight average speed be increased by not less than 10%. Work with ScotRail and freight operators on interventions to support these objectives may require infrastructure enhancements (in addition to any improvements that can be realised through timetabling / operational practices). Aligned with System Operator SBP scorecard. FNPO has started discussions with freight operators in late 2017, to understand all the issues surrounding the average speed/velocity of rail freight services, as there are many reasons why trains are planned as they currently are. Those conversations will continue into 2018, with the aim to have an agreed metric/s for the 2019/20 Scorecard and also with an action plan of how to achieve the agreed targets ahead of and to be used in CP6.	To support passenger and freight growth targets by encouraging modal shift from road transport to rail.						Subject to business case development			

[Business case 3 – Capital investment to support rail freight growth target]	CP6 total: (£m)	TBC	CP6 capex: (£m)		CP6 opex: (£m)		Total BCR		Appraisal period	30 years
Description	**Qualitative benefits**						**Quantitative benefits**			
The Scottish HLOS requires 'all reasonable steps to be taken to facilitate growth of 7.5% in rail freight traffic carried on the Scotland route, and there are additional targets for growth to be achieved through encouraging new traffic flows. The Industry Plan to achieve growth, to be completed by 31/3/19, may identify timetable, RoTR or infrastructure modifications that would facilitate this growth	Support of Scottish government's freight growth targets, encouraging modal shift from road to rail and supporting economic growth.						Subject to business case development			

[Business case 4 – Strategic depot and stabling investment]	CP6 total: (£m)	TBC	CP6 capex: (£m)		CP6 opex: (£m)		Total BCR		Appraisal period	30 years
Description	**Qualitative benefits**						**Quantitative benefits**			
The Scottish HLOS requires that 'Network Rail will cooperate with the wider rail industry to develop sufficient strategic depot and stabling capability plans for at least the next 15 years'. This is likely to require capital funding (although may already be included in existing options for funders).	Support to HLOS requirement. Support to broader objectives around passenger and freight growth and rolling stock strategy. Potential opportunities to improve maintenance and renewal efficiency through minimising empty coaching stock moves in white periods.						Subject to business case development			

Appendix E: CP6 regulatory framework – Reconciliation to Transport Scotland SoFA and Breakdown of Access Charges and Other Single Till Income

In Table E.1, we set out how our CP6 plan for Scotland, as a whole (i.e. including Scotland's share of FNPO costs), compares to the assumptions made in the Transport Scotland (TS) CP6 SoFA. The values in Table E.1 are shown in cash prices to align with the presentation of TS's SoFA.

Table E.1: Comparison of Scotland plan to Transport Scotland SoFA

£m in cash prices	SoFA	SBP	Variance
Income			
FTAC / Network Grant (SOMR)	(3,894)	(3,894)	*0*
Schedule 4 & 8	14	10	*4*
Variable charges (inc. EC4T)	(269)	(467)	*198*
Other single till income	(98)	(139)	*41*
Other operating income	(110)	(109)	*(1)*
Capital grant for enhancements	(956)	(950)	*(6)*
Total income	**(5,313)**	**(5,549)**	***236***
Expenditure			
Operating Costs (inc. BTP)	1,747	1,925	*(178)*
Renewals	2,360	2,349	*11*
Group Portfolio Fund	250	325	*(75)*
Enhancements	956	950	*6*
Total expenditure	**5,313**	**5,549**	***(236)***
Surplus / (deficit)	**0**	**0**	***0***

TS's SoFA was published in January 2018. The SoFA covers funding available for operations, maintenance and renewal activities and the completion of projects which carry over from CP5. It also includes some funding for enhancements, which will be subject to the governance and decision making processes, which will be confirmed in TS's Rail Enhancements and Capital Investment Strategy. We think that our CP6 plan for Scotland is affordable within the Transport Scotland CP6 SoFA.

In Table E.2, 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.

Table E.2: Scotland route 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	(19)	(17)	(17)	(17)	(17)	(17)	**(85)**
Electrification Asset Usage Charge	(1)	(2)	(2)	(2)	(2)	(2)	**(10)**
Schedule 4 Access Charge Supplement	(10)	(21)	(24)	(27)	(25)	(22)	**(119)**
FTAC / Grant (SOMR)	(443)	(558)	(686)	(669)	(580)	(511)	**(3,004)**
Station Long Term Charge	(16)	(15)	(15)	(15)	(15)	(15)	**(75)**
FNPO income	0	(98)	(116)	(111)	(98)	(88)	**(511)**
Charging income allocated to routes							
Electric Current for Traction	(23)	(31)	(33)	(33)	(34)	(34)	**(165)**
Total charging income	**(512)**	**(742)**	**(892)**	**(875)**	**(771)**	**(689)**	**(3,969)**

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.

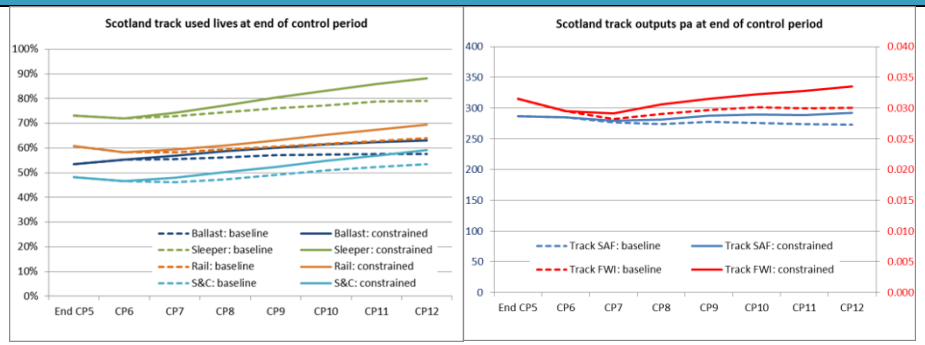
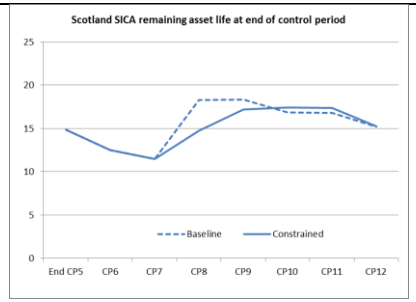
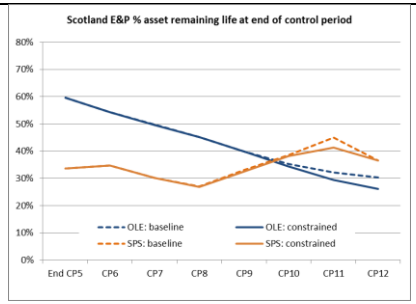
Table E.3 provides a breakdown of forecast other single till income for CP6, which is included in Table 10.2 and 10.3, above. Other single till income represents Network Rail income that is received from sources other than access charges and network grants.

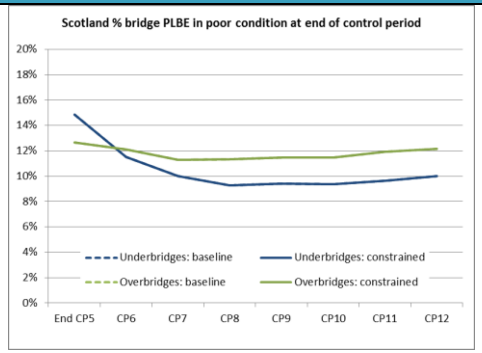
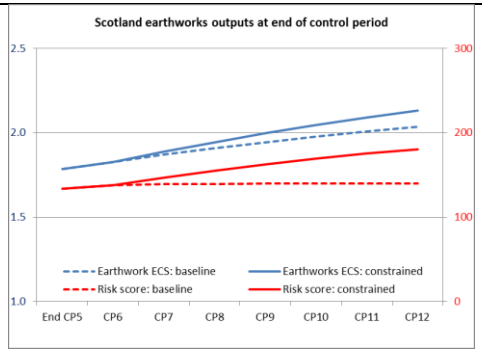
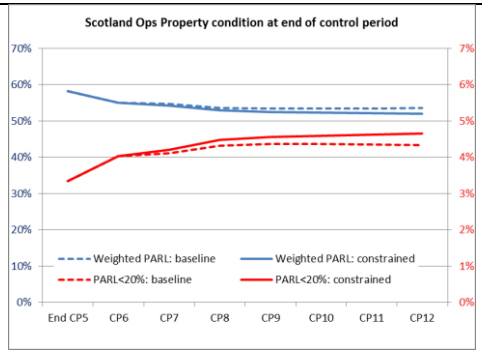
Table E.3: CP6 forecast of other single till income

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Route income							
Managed station QX	(5)	(5)	(5)	(5)	(5)	(5)	**(25)**
Franchised station lease income	(2)	(2)	(2)	(2)	(2)	(2)	**(9)**
Open access fixed contractual contribution	(0)	0	0	0	0	0	**0**
Depots	(8)	(8)	(8)	(8)	(8)	(8)	**(41)**
Finance charges (e.g. Crossrail)	0	0	0	0	0	0	**0**
Facility charges	0	(1)	(1)	0	0	0	**(2)**
Other route income	(3)	(0)	(0)	(0)	(0)	(0)	**(2)**
Income allocated to routes							
Property rental	(10)	(17)	(17)	(18)	(19)	(20)	**(92)**
Property sales	0	(1)	(2)	(1)	(1)	(1)	**(7)**
Total other single till income	**(28)**	**(35)**	**(35)**	**(35)**	**(36)**	**(36)**	**(176)**

***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		The track plan is targeted to reduce used life of S&C in CP6 with consequential safety and reliability benefits. Similarly, improvements in rail management through new automated inspection techniques and treatment methods (rail milling) are expected to reduce used life and have a safety benefit. While overall track reliability is modelled to stay static, improvements will be expected through improved use of Ellipse and decision support tools, facilitated by the Intelligent Infrastructure Programme which is not factored in to the models. Longer term forecasts show a slow degradation in used life from end-CP6 to CP12 of c.7%.
Signalling		The signalling plan is prioritised based on asset condition to address assets with the lowest remaining life, rather than seeking to sustain the remaining life of the overall portfolio. This is in line with our longer-term signalling strategy to introduce digital-based assets in future control periods (CP7 – CP9 onwards).
E&P		By the end of CP5 there will have been an approx. 25% increase in the number of single track kilometres (stk) of OLE, from 1,671 stk to 2,100 stk, and this has improved overall remaining life in the control period. The subsequent modelled reduction in OLE remaining life is in line with asset policy that dictates when major interventions at mid-life and whole life occur. No new electrification in CP6 is assumed by the model. Signalling power supplies show an improvement in line with our plans to target the oldest remaining assets in CP6.

Asset	Condition trajectory	Comment
Structures		Our CP6 plan supports our long-term drive to reduce the number of structural components in poor condition, particularly focussed on underbridges which have the biggest potential safety and performance risk to the network.
Earthworks		The CP6 modelled volume of activities is targeted to broadly sustain asset condition at CP5 exit levels. In addition the plan will target a reduction in the number of earthworks susceptible to adverse weather, especially heavy rainfall. The earthworks model forecasts a subsequent reduction in asset condition and corresponding increase in risk score, although there are considerable uncertainties in longer-term forecasts.
Operational Property		As per operational property asset policy, the plan is based on a strategy to correct non-standard construction platforms and cross falls through condition-led renewal programme and other project works. The modelled output shows a slow reduction in remaining life of the overall portfolio from the end of CP6 through to the end of CP12, and a small increase in the number of sites where remaining life is at <20%.

Appendix G Glossary of terms

Term	Full description	Supporting explanation with route context
ABP	Activity Based Planning	An established accounting process used widely across organisations and introduced by Network Rail to develop maintenance resource and costs in CP6
CAPEX	Capital Expenditure	An accounting term used to classify money spent on acquiring or improving fixed assets which is then depreciated in the accounts and non-consumable. Renewals and enhancements are treated as capex in the CP6 submission
CCTV	Closed Circuit Television	Television systems used primarily at stations are part of the SISS assets
CIS	Customer Information System	Display screens and voice announcements relayed from the signalling system to inform passengers
Control Period		The five year timespans used by Network Rail and ORR for financial and regulatory planning purposes as part of the Network Licence under which Network Rail owns and operates the national rail network.
CP5	Control Period 5	April 2014 - March 2019: the current Control Period
CP6	Control Period 6	April 2019 - March 2024: the next Control Period.
CRI	Composite Reliability Index	An indicator agreed between Network Rail and ORR which summarises the contribution of asset reliability to the safety and performance of the railway.
Digital Railway		A generic term for a Cross Industry Programme addressing improvement in capacity of the UK rail network by introducing for example improvements in digital command control and signalling systems and intelligent infrastructure and trains thus creating a more agile and dynamic network response to support supply chain and passenger flows on the national rail network.
DOO	Driver Only Operation	A method of train operation where the driver is responsible for the operation of the train doors
DRP	Dynamic Rail Profiling	Technology which supports the checking and alignment of rail profile – thus improving safety and quality in track work.
DRSAM	Director Route Safety and Asset Management	Organisational lead in the route for safety of the railway system and staff and the asset management of all subsystems.
DRS	Director Route Sponsorship	Organisational lead for sponsorship of enhancement programmes
DTS	Dynamic Track Stabilisation	Machinery and techniques to consolidate track support and allow reopening of lines with no restriction of speed
ETCS	European Train Control System	The signalling and control component of the European Rail Traffic Management System (ERTMS) developed to replace existing incompatible individual systems and integrate rail networks across Europe. A key component of Digital Railway
FDM	Freight Delivery Metric	Performance measure for freight operating companies
FDM-R	Freight Delivery Metric – Route	As FDM but where responsibility lies with the route

FDSM	Freight Delivery Service Manager	Real-time organisational lead for freight service management
FNPO	Freight and National Passenger Operators	All freight and train operators with long distance services transiting a number of routes who are therefore not allocated to one route for accounting and commercial management purposes but are managed through a central FNPO team, such as CrossCountry, DB Cargo and Freightliner
FOC	Freight Operating Company	A freight company with access rights to operate train services on Network Rail infrastructure
FPM	Financial Performance Measure	A measure of Network Rail's financial performance.
FTN	Fixed Telephone Network	The assets which transmit data and voice over physical cables (as opposed to wireless transmission)
FWI	Fatality Weighted Injury	An indicator commonly used in safety assessments and as part of the Common Safety Method to assess the level of safety.
GRIP	Governance for Railway Investment Projects	The management and control process developed by Network Rail for developing and delivering projects on the rail network.
HABD	Hot Axle Box Detector	Assets and supporting systems which alert Route Control to faults with vehicle axle support (normally bearings) allowing intervention before the vehicle fails
IP	Infrastructure Projects	Network Rail organisation responsible for implementing projects as remitted by Sponsors – to date the principal delivery partner for Network Rail investment.
ISO14001		The international standard on Environmental Management adopted by Network Rail as part of good business practice.
ISO55000		The international standard on Asset Management adopted by Network Rail as good business practice.
LMD	Light Maintenance Depot	A depot licenced and regulated by ORR to provide routine maintenance services to passenger and other trains
LTI	Lost Time Incidents	One of a set of key safety metrics used to improve and monitor safety management
MDU	Maintenance Delivery Unit	The main resource centre for Network Rail route maintenance – Western route has four at Reading, Swindon, Bristol and Plymouth.
MIR	Mechanically Independent Registration	A specific safety related requirement in OLE which limits the impact of failure of cables. It is specifically required in station areas to improve safety to passengers and rail staff I the event of dewirement.
NR	Network Rail	Network Rail: the owner and operator of the railway infrastructure in England, Wales and Scotland as defined in the Network Licence
NRPS	National Rail Passenger Survey	Significant passenger experience survey carried out every six months by Transport Focus
OLE	Overhead Line Equipment	The system of assets fitted above track which provides electrical power to the electric trains. The supply on OLE is 25 thousand volts and the transfer is between the conductor wire and the train pantograph

OPEX	Operating Expenditure	An accounting term used to classify money spent on items necessary for running a system and business. This is not depreciated as it is deemed consumable within a financial year. Maintenance and Route Control are opex.
ORR	Office of Rail and Road	The economic and safety regulator for Network Rail
OTM	On Track Machine	Equipment used for inspection, maintenance and renewal infrastructure work with the ability to access track – often fitted with rail wheels
PA	Public Address	System for making announcements to passengers at stations.
PPM	Public Performance Measure	Current industry standard measurement of performance combining punctuality and reliability into one figure. It shows the percentage of trains which arrive at their terminating station within 5 minutes (London, South east and regional services) or 10 minutes for long distance
PSP	Principal Supply Point	Main electricity supply to lineside equipment
RAM	Route Asset Managers	The post responsible for the safe and reliable management of particular rail sub-systems such as Track RAM, Signalling RAM, Buildings RAM. In CP6 the route owners of the renewals budgets and remits to deliverers.
RDG	Rail Delivery Group	Organisation which brings together Network Rail and the train operators into a single team to deliver a better railway
RFD	Route Finance Director	Organisational lead for the management of the route's finances
RM3	Risk Management Maturity Model	This model seeks to define what excellence in risk management looks like and allows organisations to assure themselves that their risk management system is operating to an adequate standard.
RS	Route Services	Route Services supplies Route Businesses with the services we decide are best provided from a national team.
SCADA	Supervisory Control and Data Acquisition	An established acronym for any system which gathers data for the purposes of system control and management. In the route context the term is relevant to the Electrical Control Room operation and the OLE system.
SCO	Supply Chain Operations	The organisation in Network Rail which provides engineering trains (including ballast and rail delivery trains), and on-track machines
SFN	Strategic Freight Network	The trunk freight network across Great Britain.
SPAD	Signal Passed at Danger	A safety incident where a train does not respond as required to the signal aspect. All SPADs are investigated to understand cause as part of improving safety. SPAD risk and history are important to informing decisions in operational and asset management.
STE	Safety, Technical and Engineering;	Part of Network Rail's central service as Technical Authority
STEM	Science, Technology Engineering and Mathematics	An initiative supported by Network Rail to encourage school pupil interest in Science, Technology Engineering and Mathematics and raise standards
TOC	Train Operating Company	A company awarded a franchise by DfT to run passenger train services under a Track Access Contract
Track Category		A classification of track governed by legislation and based on speed required, tonnage and type of

		traffic. The output is an index which governs the type of track installed, the maintenance regime and the charges applied to train operators for use of the track.
WD	Works Delivery	Route organisation for delivery of smaller infrastructure renewals

Appendix H Freight & National Passenger Operators route strategy

Scotland Route & Freight & National Passenger Operators (FNPO) Route

This summary sets out how the Scotland and FNPO routes will work together to deliver the Route Strategic Plan for Scotland. It outlines existing FNPO activity, and then describes the impact of the plans and aspirations of FNPO customers to grow and develop their businesses. It summarises what Network Rail needs to do to deliver these strategies and how, in doing so, efficiencies can be identified and realised.

National Passenger Operators:
CrossCountry is an extensive user of Scotland route and key issues include the management of fatalities and trespass incidents and right time improvements on the Edinburgh to Glasgow corridor

Caledonian Sleeper also operates nightly services, six nights per week, from London Euston via WCML to Glasgow, Edinburgh, Aberdeen and the Scottish Highlands. These services rely on overnight availability and reliability of WCML and the longer platforms at London Euston station.

Charter trains also operate across Scotland Route, especially at weekends, to a variety of leisure destinations being hauled by both standard and heritage steam and diesel locomotives. This leisure market is expected to grow during CP6.

Challenges and Opportunities

No	Section Key Opportunities / Constraints Risks	What we plan to do

	Leading response to Transport Scotland's (TS) rail freight growth challenge
	
	(O) Potential growth sectors identified by TS strategy include Intermodal, Retail (Food & Drink), Forest Products, Aggregates and Metals
	(R) Needs whole-sector approach, including FOCs, 3PLs, terminal operators, ports and rolling stock suppliers
	(R) Potential customers may decide not to "buy" for reasons outside the sectors' control
	(R) Scotland's size, geography and remoteness from markets
		• Lead response to TS challenges:
		  ○ Development of Industry Plan to target 7.5% volume growth target by end CP6 measured in kgtm
		  ○ Making rail freight easier for Scottish customers to use
		  ○ Commodity/area workshops
		  ○ Flexible approach to new traffic
		• Develop the freight element of the Scottish Gauge Requirement

	Domestic and Deep Sea Intermodal Growth (O) volume growth from ports (Teesport, Felixstowe) and inland terminals (Coatbridge, Mossend, Daventry) (O) volume growth in food & drink and retail sectors (R) Scottish Strategic Freight Network programme not completed (R) Planned capacity already used by other TOCs (R) Limited looping capability in Scotland	• Maximise use of 775m trains • Increase Average Journey Speed, origin to destination • W10/W12 gauge enhancement to allow 10'2" containers on megafret wagons over WCML to Central Belt • Facilitate earlier train arrivals into Grangemouth to meet retail customer

	(R) Train Paths and SRT discrepancies with longer, heavier trains	requirements • Facilitate overnight path to Inverness to meet retail customer requirements • Explore provision of recognised diversionary routes with adequate capability • Facilitate new terminal developments or terminal capacity enhancements • Explore opportunities for new capacity eg Mossend area enhancements
	Gauge Establishment (C) Establishment of recognised diversionary routes for gauge critical traffic	• Explore gauge clearance on key corridors e.g. WCML to Grangemouth, G&SW, Central Scotland to Inverness and Aberdeen. • Explore funding opportunities, including Third Party • Documented diversionary routes for core intermodal flows • Review of RT3973 provision to more closely align with traffic flows • Review of RT3973 provisions and work with Scotland Route to 'protect' existing capability
	Aggregates Growth (O) volume growth from Scottish quarries (R) Limited volumes (R) Proximity to markets	• Facilitate new terminal developments • Explore opportunities for longer and heavier trains, maximising loco capability • Support Terminal/Yard developments. • Support introduction of ''pop up' terminals, bringing out of use infrastructure back into use and lineside loading potential. • Review requirements for HAW traffic on lower RA routes
	Forest Products secured to rail (O) volume growth potential (R) Lack of geographically suitable loading/unloading sites. (R) Historic customer experience may inhibit development (R) Double handling from forest to road to railhead reduces the attractiveness of rail	• Facilitate new loading / unloading points, including minimum cost "temporary" solutions such as "Loading on the Line" • Support introduction of ''pop up' terminals, bringing out of use infrastructure back into use and lineside loading potential
	Food and Drink/Retail Growth (O) Volume growth potential (R) Diffuse volumes requiring consolidation for rail	• Facilitate [a network of] new loading/unloading facilities, including consolidation points • Clarify the pinch points and facilitate the expansion of 2.55m and 2.6m wide gauge between the Central belt of Scotland and Aberdeen/Inverness
	Other Traffic Growth/Reductions (O) Metals/Steel traffic growth (O) Automotive growth (O) Logistics and Mail growth (R) potential further volume loss for coal traffic	• Work with Customers to maximise opportunities for longer and heavier trains maximising loco capability. • Support Terminal / Yard developments to support growth. • Support introduction of ''pop up' terminals, bringing out of use infrastructure back into use and lineside loading potential. • Work with FOCs and Freight End Users to deliver new network connections and necessary capacity and capability, or bring out of use infrastructure back into use. • Help Scotland Route pro-actively manage coal-related OM&R as market changes • Explore opportunities for business growth with existing and potential new customers
	Yard and Siding Infrastructure and Walking Routes	• Highlight potential for Freight only Lines currently Short Term Network Changed

	(R) Yard and Siding infrastructure asset condition is critical both to sustain current traffic levels, avoiding derailment events and customer LTIs) and to support growth	out of use to return to Operational use during CP6 to Scotland Route. • Liaise with Scotland Route in order that the Route allows for funding requirements. • Clarify where growth is likely to occur • Review maintenance & renewals requirements in freight yards and sidings • Review of redundant and unused assets which could support a reduction in OMR • Working with Routes and customers to review asset condition on a regular basis. • Working with Routes and customers to establish and benchmark walking route use and condition. • Regularise the status of freight assets (actual v published) • Explore potential to transfer ownership of redundant lines/assets to secure better opportunities for redevelopment
	Capacity & Capability (R) Nature of infrastructure north of Central Belt with single lines, short loops and gradients constrains standard freight train characteristics (R) Capacity for volume from new markets, especially when target markets are geographically remote (R) capacity challenge stemming from Scot rail's "Revolution for Rail" (R) Timetable Review with 2019 timetabling limiting freight train options (O) Timetable Review provides an opportunity to review path usage, velocity and traction usage	• Review freight requirements so that they are included in all route plans • Promote targeted freight enhancement proposals to address constraints • Review RoTR constraints • Maximise train length's • Continue the use of the SPR process • Promote use of AC traction on WCML for pathing reasons • In partnership with FOCs and stakeholders, review train paths to improve journey times where feasible
	Timetable Review (O)/(R) Timetable improvements to closely reflect capability of trains and capacity of network required on busier network	• Continuation of CP5 work to review path usage • Work with FOC's to more closely align Train Slots in the Timetable with Access Rights in the TAC, and remove unused rights where there is no corresponding train slot. • Work with the Route, System Operator and FOC's/TOC's to review opportunities to improve average speed between origin and destination • Review with System Operator and customers suitability of current systems to capture network constraints and traction capability (loads book, timing loads, lengths)
	Upgrades and Disruptive Possessions (R) Major upgrade programmes such as Motherwell North Re-signalling will require significant disruptive access	• Champion requirements of FOCs and Freight End Users so that services can operate as required during disruptive possessions including availability of diversionary routes and timely provision of capacity studies to identify train service capability
	Digital Railway (O) Successful introduction of Digital Railway offers potential for growth on busiest corridors (O) Technology from Digital Railway programme could mean freight information (gauge, SA, RA, Loads books) could be electronic	• Act as internal client on behalf of freight to build sympathetic capability for freight traffic needs.

FNPO CP6 plans

Section	Key Themes	Strategy	Specifics	Owner	Timescale

Growth		• Lead response to TS challenges:
		  ○ Development of Industry Plan to target 7.5% volume growth target by end CP6 measured in kgtm
		  ○ Making rail freight easier for Scottish customers to use
		  ○ Commodity/area workshops
		  ○ Flexible approach to new traffic
		• Develop the freight element of the Scottish Gauge Requirement
			• Published rolling programme of commodity/regional workshops.
			• Published stakeholder engagement plan to review growth potential.
			• Complete a review of existing processes appertaining to 3rd Party development (ie GRIP/Leases) to understand perceived challenges and propose solutions.
			• In partnership with FOCs, End Users and stakeholders document suggestions and, subject to funding where required, promote implementation of the proposals to secure growth.
			• Work closely with Route to define requirements to secure the freight element of the HLOS gauge requirement.
				SRFM
				SRFM
				
				SRFM / System Operator / Sponsor / Property
				
				SRFM / System Operator
				
				SRFM/System Operator / DRAM
					Nov 2017
					Nov 2017
					
					By April 2018
					
					By April 2018
					
					Plan by April 2018, Delivery of agreed proposals by end CP6

Safety	Lost Time Incidents	Reduce Lost Time Injuries (LTIs)s through concentration on Network Rail yard infrastructure, connecting sidings and walking route conditions	• Published rolling programme of joint health and safety visits with customers (FOCs/TOCs) to agreed sites. • Route Vegetation clearance programme to include Network Yards, Sidings and Walkways • Complete review of authorised walking routes/crew change locations • Subject to funding, a programme of improvements will be specified and implemented. • 'Go Look See' with customer within two weeks of any reportable customer LTI event on Network infrastructure.	FNPO Operations and Safety Manager / SRFM	Initial Programme to be published in March 2018 then annually during CP6
	Freight Train derailments	Reduce freight train derailments through concentration on Network Rail yard and sidings infrastructure.	• Published rolling programme of joint health and safety visits with customers (FOCs/TOCs) to agreed sites. • End Customer Forum to be implemented to share issues of concern around connection points and maintenance either side of boundary point. • Timely renewal/refurbishments of FO Infrastructure to prevent derailment risk • Subject to funding, a programme of improvements will be specified and implemented.	FNPO Operations and Safety Manager / SRFM	Initial Programme to be published in March 2018 then annually during CP6

	FNPO SPADs	Reduce freight SPADS by collaborative working	• SPAD Forum to be implemented with FOCs to share learning and best practice.	FNPO Operations and Safety Manager	Creation of Forum by April 2018, meeting regularity proposed quarterly
Performance	Right time performance at key hubs and terminals	Use Strategic Freight Corridors to focus delivery Measuring Right Time Departures from terminals at the start of the journey	• Local Working Groups • Use of Control Rooms and Visualisation at major sites if required • Focus on terminals at Mossend, Coatbridge, Grangemouth and Oxwellmains • Proactive management of On Time targets at all Scottish terminals • Re-brief Freight Strategy – 'Freight Delivery Matters' and linkage between RTD and FDM delivery	SRFM / FNPO Performance Manager	Quarterly FNPO review of terminal engagement arrangements
	Measuring FDM and FDM-R	Focus on WCML & other defined key routes: • Asset Performance • Asset Resilience • Effective contingency plans	• Target FDM-R Scotland target for end CP6 of 95.3%. • Transport Scotland HLOS target of 93% FDM at start CP6 increasing to 94.5%FDM at end CP6 • Input into Route CP's for consistent application of freight contingency arrangements. • FSDM input into incident recovery real-time to build consistency. • Asset Reviews with Route Asset teams to share traffic forecast and asset challenges with SRFM. • Influence at RSPG to define future asset strategy in terms of renewals to support freight growth	SRFM / FNPO Performance Manager	Annual target setting during CP6. Periodic review of FDM-R delivery and key influencers
	Joint Freight Performance Improvement Strategies	Agreed Joint Strategy with each FOC including details of plans to reduce each delay area	• Complete plan annually with each FOC concentrating on primary delay categories. • Agreed industry information share. • Regular reviews against plan with each Route and FOC customer.	FNPO Performance Manager / CRE	Joint Strategy Plan per Operator to be published annually during CP6 and reviewed quarterly
Capacity & Capability	Identifying future capacity needs	Bring together all freight capacity plans; • Route Studies • SSFN • Customer specific	• All future project specifications to include a specific output level for freight services, that reflects the SSFN specifications and forecast future traffic requirements. • Future capability needs assessment to be undertaken – RA, Gauge, HAW – future plans for improvement to meet capacity requirements • Interactive maps for gauge, RA to be created and maintained • Continued support for longer, heavier trains programme	Project Sponsor / Lead Strategic Planner / SRFM / FNPO Head of Strategic Capability / FNPO Head of Network Management	Future capability programme definition by April 2018 and delivery per strategic route.
	Review existing	Undertake Capability Review	• Improved gauge and operational flexibility on key freight	SRFM / FNPO	Existing capability

	capability constraints		corridors. • Robust gauge cleared diversionary routes. • Transparent network capability per route for customers	Head of Strategic Capability / FNPO Head of Network Management / Lead Strategic Planner	constraints review definition by April 2018 and delivery per strategic route
	Management of capability	Produce baseline freight statement that outlines HLOS requirements. Initiate Capability Review to contribute to strategy to deliver Scottish Gauge Requirement.	• Review requirements to satisfy requirement to deliver HLOS requirements that; o Capability of the network to be operated and maintained as a minimum throughout CP6 at a level which satisfy all track access rights in place at the time of HLOS or by March 2019 o all Scottish Routes are maintained to be capable of accommodating the gauge of all locomotives and passenger rolling stock , including cross-border services and charter operators' vehicles, which have run in Scotland in CP4 and CP5 or are known to be planned to run in Scotland in CP6. o Freight gauge capability should be maintained to at least the level shown in the Freight Gauge Database Map, or the Sectional Appendix, or full suite of RT3973 forms or Scotland route at time of HLOS publication	SRFM / FNPO Head of Strategic Capability / FNPO Head of Network Management / Lead Strategic Planner / DRAM	Recorded Details of existing capability for FNPO customers by April 2018
	Freight Train Average Speed	Undertake average speed review to ascertain what would be required to deliver HLOS target	• Establish framework for average speed measurement and improvement. • Work with Stakeholders to target specific flows and services • Annual plan in connection with timetable change. • Specifications for enhancement projects to consider journey time improvement output for freight services • Produce proposals, iterate with stakeholders, test and review with Transport Scotland annually.	FNPO Head of Performance / FNPO Head of Strategic Capability / FNPO Head of Network Management	Measurement framework to be agreed by industry May 2018. Flows to be agreed for Dec 2018 TT change and annually thereafter.
	Connections to new terminals	Facilitate connections to the network and associates capacity	• Work with FOCs, Freight Users and Developers to identify potential new connections. • Information share of prospective new sites via RSPG. • Identify potential sites (new connections, bringing out of use infrastructure back into use, lineside loading) to facilitate growth. • Advice to System Operator of future sites and flows to understand timetable and capacity impact. • Facilitate and promote "Loading on the Line" wherever possible.	SRFM / FNPO Business Development Managers	Forward programme of FEU and Developer engagement to be agreed annually during CP6. Freight Developments register to be held by SRFM for review at

			• Promote innovative options for temporary or cost-effective connections		RSPG quarterly
	Delivery of agreed CP6 freight enhancement programme	Continuation of Scotland Strategic Freight Network Funding and Industry Governance Group	• Promotion of potential freight projects and enhancement schemes. • Prioritise funding to best meet demand and facilitate growth. • Align SSFN proposals with Route and National proposals to deliver a coherent forward strategy which best meets overall requirements	SRFM / System Operator	Ongoing
	Consideration of incremental freight improvements in all schemes	Structured review process with Route planners and through mechanisms such as the Sub Group of the Route Strategy Planning Group	• Work with FOCs and System Operator through mechanisms such as the Sub Group of RSPG to identify opportunities for incremental freight enhancements as part of the development of enhancement and renewal proposals –such as removal of differential speed restrictions aligned to renewals or enhancements • Defined and consistent engagement process to be agreed with Route Planning team and Sponsors	SRFM /System Operator	Defined engagement process and inputs to be in place with Route Strategy by April 2018

Network Availability	Engineering plans that meet both FNPO customer and Route needs.	Regular and co-ordinated freight input into
		• Engineering Access Statements
		• Access Planning Requests
			• Engineering plans that are
			  • Transparent
			  • co-ordinated
			  • consistent across Routes
			  • planned well in advance and
			  • take into consideration contingency arrangements for long distance services
			  • Deliver HLOS requirement that one suitable Anglo-Scottish Route must be available at all times (and one east to west Scottish route)
				FNPO Capability and Planning Manager / SRFM	Annual review of process/requirements between FNPO and Engineering Planning from March 2018 incorporating end to end Engineering Access process

Freight Asset Management Plans	Effective asset management arrangements for yards and sidings infrastructure	Create a joint understanding of maintenance responsibility, traffic level changes and asset condition	• Address perceived deterioration of yards over CP5 • Enable Asset Management and Engineering teams to plan the targeted maintenance and renewals requirement of each site • Ensure appropriate standards in use at each location.	SRFM / Route Infrastructure Director	Bi-annual review of yard and sidings maintenance priorities / traffic flows commencing 2018
	Review of Locomotive and Heavy Axle Weight (HAW) track and structure restrictions	Establish potential/cost for removal of restrictions	• Input into track/structures renewals and maintenance plans • Normalise capability within Sectional Appendix to sustain existing traffic and support growth with particular reference to the Far North Line between Helmsdale and Georgemas.	SRFM / Route Infrastructure Director / DRAM	Review definition and programme issued by April 2018. Delivery per strategic route to be programmed

	Review Freight Only lines and other infrastructure	Understand the potential to reduce OMR	• Review need based on existing & predicted future use • Input into track/structures/maintenance plans • Ensure adequate budgetary provision and plans for those FOLs that have been temporarily taken out of use though the Short Term Network Change process, for which future use is known • Outputs to be agreed with Customers/ORR/TS	SRFM / Route Infrastructure Director / DRAM	Definition of Review by December 2017. Delivery of initial opportunities report by July 2018. Agreed Action Plan through CP6 per Route.
	Removal of Speed restrictions in timely fashion	Establish removal plan for TSRs recognising freight impact	• Work with the Route teams to identify the impact of speed restrictions on freight services and work collaboratively to remove them	SRFM / Route Infrastructure Director / DRAM / FNPO Performance Manager	Ongoing periodic review of performance impact of TSR to be agreed per route.

Appendix I Activities to be delivered for Scotland Route by Route Services in CP6

Route Services supplies Scotland 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. Delivered through a team of c.3,000 employees, the Route Services portfolio consists of c.58 services, with £1bn of direct spend as well as the management of a further £2bn of indirect spend on behalf of the Route businesses.

Through the services they deliver, we look to Route Services for subject matter expertise, access to their supply chain, and strong delivery partnerships with suppliers, to get the best value and quality possible for Scotland. Route Services is responding positively to our challenge to them to deliver the outstanding performance, cost competitiveness and commercial approach which we expect, as well as supporting Scotland in developing an increased focus on provision of locally based plant & resources. The majority of rail fleets are managed within the Supply Chain Operations department in Route Services as part of the central support to Scotland Route. This enables the Route to benefit from economies of scale as result of aggregating demand, optimisation of resources on a national basis and specialisation. Some of the fleets contain resources that are specifically allocated to Scotland to align with demand (plain line stoneblowing, tamping, certain wagons and winter fleet given that the effects of snow and ice are often most acutely felt in Scotland Route). Other fleets are coordinated nationally and shared across Routes such as multipurpose stoneblowing, rail grinding, milling, high output, infrastructure monitoring, incident response, certain wagons and seasonal resources. Recognising the Scottish Government desire that significant rail investment funds should be deployed by Network Rail in a manner that supports sustainable economic growth in Scotland, with Route investment, Route Services has re-developed the Millerhill ex-logistics depot to the east of Edinburgh. This facility will have aggregate handling capability which allows the use of locally sourced ballast and to locally process spent ballast which would normally be sent to either Kingmoor (Carlisle) or Tyne Yard (Newcastle) for processing, reducing handling costs and the environmental impact of track renewals activities, as well as developing the local economy. The Route is working with our High Output programme colleagues and Route Services to further develop the capability of the site into a High Output Operations Base (HOOB) to support our CP6 High Output operations, reducing the requirement for the train to transit to and from Tyne Yard at the end of each shift.

The introduction of Service Catalogues with customer-facing KPIs has enabled us to hold Route Services to account at a local level, as well as identify mission critical services for the Route, and collaborate on joint improvement plans. Further examples of where our collaboration has led to Route benefits include new IT infrastructure being delivered, such as new Wi-Fi, complete IT infrastructure for new buildings, enhanced IT through Depot Improvement initiatives, and IT network upgrades where there is congestion.

Our strategic business plans are closely aligned, with some specific areas of efficiency and opportunity identified, including,

- Enhancement of Remote Condition Monitoring through the deployment of Intelligent Infrastructure and retirement of Assetwatch;
- Data overlay from Intelligent Infrastructure and Centrix to create a single enhanced view of asset condition;
- Improved support for planning & delivery safe work standard 019 through the development of electronic forms and templates to increase data accuracy;
- Exploiting the data available from the new trains to be deployed in CP6 to support non-cyclical maintenance regimes;

- Improvement of materials and logistics supply chain to support sustainable economic growth in Scotland with optimal, locally developed and delivered solutions for rail investment (Transport Scotland HLOS) e.g. Millerhill logistics & aggregates facility, far north ballast supply, regional hub stores and scrap recovery.
- Effective & efficient delivery of maintenance & infrastructure support services including On Track Machine (eg tamper) utilisation, seasonal treatment delivery, and road fleet.
- Supporting IP Track & IP enhancements projects in effective & efficient delivery solutions of renewals & major route enhancement programmes – e.g. mitigating engineering haulage supply risks, aligning access & resources planning processes and identifying further cost savings.

Route Services – services provided to Scotland

Supply Chain Operations
Aerial Survey
Breakdown Recovery
Delivery of Materials by Rail
Delivery of Materials by Road
High Output
iStore
Lifts and Escalators
Mechanical Electrical Lock Fitting
Mobile Flash Butt Welding
National Signalling Works
On Track Plant
Operational Property Helpdesk
Overhead Line Condition Renewal Works
Product Management
Project Engineering
Project Management Services
Rail Profile Treatment Grinding and Milling
Recycling
Road Fleet
Seasonal Autumn
Seasonal Summer Weedspray
Seasonal Winter
Stoneblowing & Tamping

Information Technology
Building Infrastructure IT (BIIT) Projects
IT Delivery Projects
IT Helpdesk
IT Strategy and Planning Services
Local IT Delivery Management
Technology Infrastructure Services

Business Services
Accounts Payable
Apprentices
Billing and Income Collection
Business Intelligence Team
Competency Assurance
Content Management
COOM (Call-off Order Management)
Energy Bureau
Engineering Graduates
Expenses
HRSS Employee Records
HRSS Medicals
HRSS Payroll
HRSS Recruitment
Leadership and Professional Development
Organisational Data Maintenance
PPE Helpdesk
Records Management
Schedule 4 Compensation
Taxation and Accounting
Technical Competencies
TOC Billing and Income Collection

Contracts & Procurement
Category Management
Contract and Supplier Management
Governance and Assurance
Procurement

Appendix J Route Strategic Plan alignment to HLOS requirements

The Scotland Route Strategic Plan is only one element of Network Rail's overall response to Scottish Ministers' requirements for CP6 as published in their High Level Output Statement. This plan should be read together with that of the System Operator, Freight & National Passenger Operators, and other NR central functions for the overall view of the plan. Alignment between this Route Strategic Plan and the HLOS is illustrated in the below table:

Section	No.	Text	Reference within Strategic Plan documents	Comment
1 Legislative context	1.1	This High Level Output Specification (HLOS) fulfils the requirements ofparagraph 1D(1) of Schedule 4A to the Railways Act 1993, as amended by the Railways Act 2005 by setting out to the independent regulator, the Office of Railand Road (ORR): - with respect to the functions and powers transferred to them under the Railways Act 2005, what the Scottish Ministers require the rail industry toachieve with regard to the rail network in Scotland during the review period covering 1 April 2019 to 31 March 2024 - as far as is possible, the public financial resources which are, or are likely to become, available to support those activities over the same review period (the Statement of Funds Available or SoFA)	*N/A*	*This plan has been produced consistent with the SoFA published by Transport Scotland on 25/01/2018.*
	1.2	This HLOS represents a formal response to the ORR's review initiation notice of 27 March 2017 and is written on the basis that Network Rail will deliver the majority of outputs expressed in the ORR's Final Determination for Control Period 5 (2014-2019) with some elements of the Control Period 5 (CP5) enhancements portfolio requiring delivery within Control Period 6 (2019-2024).The Scottish Ministers expect these residual elements will be delivered as apriority in Control Period 6 (CP6).	*RSP Section 5*	

2 Background on Scotland's railways and policy context	2.1	Scotland's Economic Strategy sets out the Scottish Government's plans to achieve a more productive, cohesive and fairer country. Sustainable investment in our people, our assets and our infrastructure is identified as being vital to economic growth. Scotland's railways are key to Scotland's prosperity and quality of life, sustaining links between our communities to employment opportunities, businesses, industries, markets, services and educational and social facilities.	*RSP Sections 1, 2, 6*	
	2.2	As specified in our published National Transport Strategy, our Key Strategic Outcomes for all transport modes, including rail, support our priorities for sustainable, inclusive growth. They are: - improved journey times and connections - reduced emissions - improved quality, accessibility and affordability	*RSP Sections 1, 2, 7, System Operator SP Section 3a*	
	2.3	These Key Strategic Outcomes are reflected in our Strategic Priorities for rail,which are: - improved services – faster journey times, strengthened commuter services and effective connections between cities and regions - improved capacity – optimum utilisation of network and on-train capacity through high levels of performance - improved value - efficiency and value for money, for the taxpayer and the fare-payer and the rail freight customer - more effective integration - between rail operators and rail infrastructure management, and between rail and other transport modes - increasing inclusive economic growth	*RSP Section 2, System Operator SP Section 3a*	
	2.4	The management, operation and governance of all railway activities in Scotland which are funded by the Scottish Government, and the regulatory framework for CP6, must be fully aligned with, and demonstrably support, the Strategic Priorities. It is important that as rail governance arrangements evolve elsewhere in Great Britain, they must not be allowed to compromise or confuse these clear Strategic Priorities in Scotland.	*N/A*	*The SBP documents focus on Network Rail's plans for meeting stakeholder priorities, but is not intended to cover areas of governance and the regulatory framework.*

	2.5	It follows that Network Rail must be able to demonstrate its ability to deliver in line with the Strategic Priorities for Scotland, both at Scotland route level and through the Freight and National Passenger Operations and Systems Operator functions. This requires a wide and comprehensive understanding across the organisation, particularly at senior level, on what the Strategic Priorities are, and a focus on how they can be best achieved. This should be reflected in the approach to reporting and incentive regimes for all staff who play a role in the delivery of outputs for the Scottish route.	*RSP Section 3, FNPO SP Section 4, System Operator SP Section 3a*	*Scottish Government Strategic Priorities and HLOS requirements are reflected in Route, FNPO and System Operator Scorecards.*
3 Future rail enhance-ments in Scotland	3.1	As highlighted in the Network Rail Scotland Route Study, published in summer 2016, demand for rail is expected to grow in the coming years and our priorities and investment activities in CP6 and beyond will look to support continued growth on the network in a way which best supports Scotland's communities and its economy.	*N/A*	
	3.2	Since 2007, there has been over £7bn invested in Scotland's railways, with in excess of 2,300 trains operating on daily basis, carrying more passengers than ever before. There have been new fleets of modern trains introduced, new and improved services, the delivery of 76 kilometres of new railway and the opening of 14 new stations.	*N/A*	
	3.3	Investment will be needed to continue to meet the demands from the growth of rail. However, there have been significant challenges with the costs and delivery timescales of major rail projects in CP5 and the approach to project specification in CP6 will reflect lessons learnt from that. Transport Scotland has established a Major Rail Projects Portfolio Board with underpinning Programme Boards to provide additional assurance to the Scottish Ministers about the progress, management and robust and consistent governance acrossthe entirety of major rail projects in Scotland in CP5. Network Rail should work with Transport Scotland to improve the governance processes for programme development and delivery in order to secure improved outcomes for CP6 and beyond.	*RSP Sections 6,7, System Operator SP Section 3a*	

	3.4	These processes will be supplemented by a new approach to specifying capital rail investment and release of funds, through a Rail Enhancements & Capital Investment Strategy (the Investment Strategy). This includes major renewal projects which seek to deliver wider network benefits, such as a signalling renewal strategy, or which require significant additional investment in order to maximise an opportunity to improve rail services.	*RSP Section 6, System Operator SP Section 3a*	*Future governance around the approval of renewal projects is currently under discussion with Transport Scotland, Network Rail and ORR input.*
	3.5	Enhancement and major renewal projects, designed to meet the projected demand for rail, will be drawn from a pipeline of potential schemes that satisfy the investment criteria set by the Scottish Ministers, and where the rail industry can fully demonstrate that the scheme has credible, efficient and deliverable technical proposals which can be delivered efficiently through the supply chain.	*RSP Section 6, System Operator SP Section 3a*	*As per 3.4.*
	3.6	Decisions on commitment to funding projects will be taken by the Scottish Ministers when business cases are fully developed following industry engagement and consultation with local stakeholders. The investment hierarchy is based on the criteria below where value for money can be proven: - the ability to derive maximum utility from the existing network through whole industry measures that can make best use of existing railway assets, fully exploiting timetable/service-based opportunities and rolling stock options - the ability to derive maximum utility from the existing network from opportunities (such as asset renewals or timetable exercises), fully exploiting these to ensure maximum value for money - efficient and affordable targeted investment in our infrastructure, in the right location and at the right time centred around whole industry measures to unlock additional capacity on the network - targeted investment to help reduce inequality and increase inclusive economic growth	*RSP Section 6, System Operator SP Section 3a*	*As per 3.4.*
	3.7	There is a number of projects already under development, as well as consideration of our approach to ring-fenced funds including stations (which will assist with improved accessibility), freight, and level crossing funds. Our requirements for continuing the rolling programme of electrification (including rolling stock solutions) appropriate to the Scottish network will be developed and there will be opportunities for new projects to be considered. Further details on how this pipeline will work and full governance arrangements will beset out in the Investment Strategy to be published later in 2017.	*RSP Section 6, System Operator SP Section 3a*	*As per 3.4.*

4 Creating capacity to deliver	4.1	The Scottish Government considers that significant rail investment funds should be deployed by Network Rail in a manner that supports sustainable economic growth in Scotland, including through the creation of secure rail industry employment within Scotland. The Scottish Government is persuaded that efficient delivery is optimised by steady work-banks, avoiding peaks and troughs in activity. Steady activity allows and requires the allocation and provision of resources based in Scotland.	*RSP Sections 1, 2, 6, 7, System Operator SP Section 3a*	
	4.2	Network Rail must ensure that it plans and invests in its capability in Scotland to deliver the requirements of this HLOS and in accordance with other Scottish Government policies and strategies now and in the future. Network Rail should work with its industry partners, including the ScotRail Alliance, to deliver optimal, locally developed and delivered solutions for rail investment in Scotland, in particular through: - the creation of an expert whole-rail-system project client and sponsor capability based in Scotland, to control all stages of investment project development and delivery - dedicated resources for timetabling specific to the Scottish network, which should be familiar in detail with its geographical, market and operating characteristics, using processes and priorities fully aligned with the StrategicPriorities -development of maintenance and renewal policies and programmes, consistent with the Strategic Priorities, with sufficient plant and staff for delivery allocated to and normally based in Scotland. It is recognised that there will be some exceptions where Network Rail is able to demonstrate a clear efficiency from shared use and a proportionate allocation of GB-wide resources -development of an efficient electrification technical specification optimised for Scotland that, in support of the Investment Strategy, can deliver an efficient and affordable rolling programme of electrification with appropriate plant, staff and resources based in Scotland to deliver the outputs and maximise the benefits to Scotland, including through the supply chain - where possible, creating the capacity to deliver should support wider Scottish Government policies on tackling inequality and improvingemployability and skills	*RSP Section 5, 7, System Operator SP Section 3a*	*An 'efficient electrification technical strategy' is not covered in the route strategic plan, as this primarily affects future enhancement opportunity. Nevertheless discussions are underway between Route and the central Safety, Technical and Engineering team to develop this, building on learning from current electrification projects across GB.*

5 Funding for cross-border schemes	5.1	Where any significant capital investment projects relate to cross-border railway lines, these will only be taken forward subject to final confirmation of a regulatory funding model that ensures a fair distribution of cost and benefits. For example, the Scottish Ministers and the Secretary of State are working together to identify High Speed Rail infrastructure enhancements for CP6 and beyond that could improve journey times, capacity, resilience and reliability oncross-border routes between England and Scotland. The Investment Strategy will contain the detail on the approach to be taken for the development and integration of projects with cross-border implications.	*System Operator SP Section 3a*	
6 Requirements of the Scottish Ministers	6.1	The Scottish Ministers require the rail industry to work together effectively to deliver the following railway outcomes in a way which represents best value and reduces journey times across the network with clear links to the Scottish Ministers' Strategic Priorities for rail.	*N/A*	
Network capability/capacity	6.2	The Scottish Ministers require that the capability of the network will be operated and maintained as a minimum throughout CP6 at a level which will satisfy all of the track access rights of all passenger and freight operators in place at the date of the publication of this HLOS and any rights secured, or in course of being secured, between then and the 31 March 2019. In particular, it must befully consistent with the service level commitments specified in the ScotRail and Caledonian Sleeper franchises.	*RSP Section 3, System Operator SP Section 3a*	
	6.3	Since the devolution of rail powers in 2005, the Scottish Government has fully funded Network Rail to establish and maintain an accurate asset database including gauge data. The Scottish Government has also fully funded the maintenance of asset capability, including gauge clearances. The current approach to gauging processes has not been satisfactory, adding significant risk, delay and cost to the introduction of new rolling stock, the reallocation of existing rolling stock, the development of new rail freight business, and the efficient operation of charter and tourist trains. Passenger and freight trainoperators should be able to plan the movement of vehicles around the network without the need for expensive and time consuming bespoke gauging exercises.	*RSP Appendix D, FNPO SP Section 5*	*The development of a Scottish Gauging Strategy has been initiated (with a cross-industry workshop held on 02/11/2017) to develop the Scottish Gauge Requirement and respond to other HLOS gauging challenges, such that a detailed plan is in place for the commencement of CP6. If it is determined that incremental funding is required to support the implementation of the Scottish Gauge Requirement this will be proposed as a pipeline project for capital investment.*

	6.4	Therefore, the Scottish Ministers require that, by the end of Control Period 6, all Scottish routes are maintained to be capable of accommodating the gauge of all locomotives and passenger rolling stock, including cross border services and charter operators vehicles, which have run in Scotland in CP4 and CP5 or are known to be planned to run in Scotland in CP6.	*RSP Appendix D*	*As per 6.3*
	6.5	Freight gauge capability should be maintained to at least the capability in the most recently published issue of the Freight Gauge Database Map (published and maintained categories), or the Sectional Appendix, or the full suite of RT3793 forms for Scottish routes, whichever is most capable at the time of publication of this HLOS. Together, the passenger and freight specification are the Scottish Gauge Requirement.	*RSP Appendix D*	*As per 6.3. We note that Transport Scotland have confirmed that 'RT3793' should read 'RT3973', and have clarified that 'freight gauge capability' is explicitly aimed at gauge only, not route availability.*
	6.6	It is recognised that the implementation of the Scottish Gauge Requirement will require a period of transition. The Scottish Ministers require that Network Rail will work with Transport Scotland and the industry to develop a gauging strategy by 31 March 2019 to achieve this Scottish Gauge Requirement with a continuous, rolling programme to cover the entire Scottish Network (except only where Network Rail has persuaded the Scottish Ministers that clearance would entail disproportionate cost) to commence no later than 1 April 2019 and to be completed by the end of CP6.	*RSP Appendix D*	*As per 6.3.*
	6.7	The strategy should draw on the work to define standard gauges produced by the Vehicle-Structure System Interface Committee (SIC), and include PG1, PG2 and lower sector vehicle gauge - these gauge being adapted as necessary to meet the Scottish Gauge Requirement.	*RSP Appendix D*	*As per 6.3.*
	6.8	Infrastructure, maintenance and renewal works should be controlled so as not to reduce or restrict the gauge. Passenger and freight operators should not be asked to pay for gauging surveys, since these should be kept up to date as part of Network Rail's asset database, nor for rectification works for clearances that have been permitted to deteriorate.	*RSP Appendix D*	*As per 6.3. Transport Scotland have since clarified that Scottish Minister's intention is that once the Scottish Gauging Requirement is in place, operators should not have to pay for gauging surveys if they can demonstrate their vehicles fit inside this gauge. Operators would still be liable for costs when introducing new rolling stock, if through absolute or comparative gauging they are unable to demonstrate compatibility with the published gauge of the route.*

	6.9	It is recognised that platform stepping clearances are more complicated than passing clearances, and it is accepted that specific work may be needed for platform stepping distances for new stock introduction. However, new stock introductions should not be expected to pay the cost of restoring clearances and track position that has been allowed to move from clearances required for existing stock (or, after the transition period, the Scottish Gauge Requirement).	*RSP Appendix D*	*As per 6.3.*
Availability of cross-border routes	6.10	Cross-border rail services provide vital connections for passengers, essential routes to market for freight users and contribute to regional economic development, including within Scotland. Accordingly, the Scottish Ministers require that where maintenance, renewal or enhancement activity is required on cross-border routes, including for High Speed Rail works, at least one route will be available at all times for the passage of timetabled sleeper, passenger and freight services through to and from London.	*RSP Section 7, LNW RSP Section 6, LNE RSP Appendix H, System Operator SP Section 3a*	*Requirement reflected in the Scotland RSP. Alignment with LNW, LNE and System Operator plans will be validated before submission of the Delivery Plan.*
	6.11	In terms of franchised operations, journey times on the route that is to be made available through to and from London should be no greater than the relevant Service Level Commitments or equivalent as specified by the Scottish Ministers or the Secretary of State for Transport at the date of publication of this HLOS.	*RSP Section 7, LNW RSP Section 6, LNE RSP Appendix H*	
	6.12	In line with the arrangements in place for CP5, where circumstances require short-duration, minor variations to the available route, the Scottish Ministers, the public, passenger and freight operators and other customers should be advised as far in advance as is practicable.	*RSP Section 7, LNW RSP Section 6, LNE RSP Apendix H*	
Improving journey times	6.13	Fast and efficient rail services across Scotland and between Scotland and the rest of the UK are vital to opening up new markets and business opportunities, driving up competitiveness, ensuring connectivity, and increasing access to employment and education and are a priority for the Scottish Ministers. The Scottish Ministers require a journey time improvement output for NetworkRail for CP6 to ensure tangible progress against this outcome is realised and embedded in all appropriate Network Rail processes whilst recognising the need for continuing connectivity across the network and a timetable which works for passengers.	*RSP Section 3, System Operator SP Section 3a*	

	6.14	In support of the Scottish Ministers' strategy to improve journey times and connections and the priority they accord to this matter, the Scottish Ministers expect that the outputs of the network will maximise all appropriate opportunities to decrease average journey times (minutes per train mile) across all service groups, including cross-border operators' journey times.	*RSP Section 3, System Operator SP Section 3a*	
	6.15	The Scottish Ministers therefore require that the outputs of the network will be maintained in such a manner as to enable the operators of the ScotRail Franchise to achieve improved journey times based on decreasing average minutes per train mile as specified in Schedule 7.2 of the ScotRail Franchise Agreement (and any subsequent variations) where Minutes per Mile targets measured across all ScotRail Sectors within CP6 are set at 1.587 (December2019) to 1.576 (December 2024).	*RSP Section 3, System Operator SP Section 3a*	*The Route, System Operator and access beneficiaries are formalising an agreed baseline against which achievement of this output can be measured, to align with scorecards and to reflect the responsibilities of each organisation.*
	6.16	This will deliver demonstrable improvements to journey times across service groups measured against the published timetable on the 31 March 2019. These improvements should be delivered through good operational practices,including timetabling exercises and programmes, and should be in addition to the journey time improvements secured through any major capital works, as identified through the Investment Strategy, which are focussed primarily onjourney time improvements.	*RSP Section 3, System Operator SP Section 3a*	
	6.17	In addition, the Scottish Ministers require Network Rail to develop a freight journey time metric based on average speed (mph) to be introduced at the start of CP6 to increase the average speed of freight trains by not less than 10% through good operational practices, including timetabling exercises and programmes, and through collaboration with freight operators and customers.In delivering this outcome, Network Rail should ensure that achievement is attained by acceleration of existing and new freight services. Progress against this outcome will be reviewed during CP6 on an on-going basis in order to assess its deliverability.	*RSP Section 3, Appendix H, FNPO SP Section 2*	*Since 80% of Scottish container traffic is cross-border, we intend aligning the route scorecard with a new national FNPO freight average speed metric to be introduced for CP6.*
Perform-ance	6.18	The Scottish Ministers require a consistently high level of performance from rail services in Scotland for the benefit of passengers and freight users in CP6 which builds on what is expected to be achieved by the end of CP5.	*RSP Sections 2, 3, 4*	

	6.19	The Public Performance Measure (PPM) is well understood and recognised by both the industry and the travelling public and its consistent use over time and across the GB network enables both historic and geographic comparison, helping to drive efforts to improve. The Scottish Ministers consider that PPM balances performance with capacity management in a proportionate manner. Critically, the headroom built into the PPM measure enables better connectivity,for example where services can be held for late running connecting services.It also supports accessibility, where, for a number of reasons, passengers may take a little longer to board trains at stations. The Scottish Ministers remain clear that performance improvement must not be delivered at the expense of average journey times.	*RSP Section 3*	
	6.20	The Scottish Ministers therefore require that the outputs of the network will be maintained in such a manner as to enable the operators of the ScotRail Franchise to deliver a PPM target of 92.5% for every year of CP6 and the operators of the Caledonian Sleeper Franchise to meet their Right Timetargets. The Scottish Ministers also require that the outputs of the network will be maintained in such a way as to recognise the performance requirements of other operators on the Scottish network.	*RSP Section 3*	
	6.21	The performance of infrastructure, and the management of major stations in Scotland contribute to the overall satisfaction of passengers, as measured through the independent Transport Focus National Rail Passenger Survey (NRPS). Therefore, and in order to ensure alignment of objectives between management of operations and infrastructure, the Scottish Ministers require that Network Rail should share, and be measured against, the sameNRPS targets as are specified in the ScotRail Franchise contract, Schedule7.2, Part 2, Para 11.	*RSP Section 3*	

	6.22	In support of the delivery of the PPM and NRPS, the Scottish Ministers also require Network Rail to work with its industry partners to develop and measure key performance indicators which as a package: - encourages and facilitates outperformance of the PPM target, as outlinedabove· reflects the impact of performance, including at intermediate stations, on current passenger experience and the attractiveness of rail services for new passengers - reflects the economic value of services, disaggregated by Scottish service group, or line, or time period or a combination of those things - is sufficiently flexible to take account of periods of severe disruption, with a focus on working with all affected operators in those circumstances to provide the best service possible for rail users - does not add additional expenditure to the baseline costs of the Scottish operating route	*RSP Section 4*	
	6.23	The Freight Delivery Metric (FDM) measures the percentage of freight trains that arrive at their destination within 15 minutes of the scheduled time and in CP6 the Scottish Ministers require that freight trains on the Scotland route achieve an FDM of a minimum of 93% at the start of CP6 moving through staged improvements towards 94.5% at the end of CP6.	*RSP Section 3, FNPO SP Section 2 & 5*	*In order to support delivery of wider GB freight targets, the Route has targeted a higher FDM number than specified within the HLOS.*
Rail freight growth target	6.24	The Scottish Government reaffirmed its commitment to supporting the rail freight sector in its rail freight strategy, Delivering the Goods, undertaking to work collaboratively with industry on a series of initiatives designed to help the sector secure new markets to replace declining traditional markets such as coal.	*RSP Section 2, Appendix H*	
	6.25	In support of this, the Scottish Ministers require that Network Rail clearly demonstrate throughout CP6 that it is using all levers at its disposal to make the use of rail freight attractive to business across Scotland, including simplicity of processes and a flexible approach to accommodating new rail freight traffic.The Scottish Ministers expect Network Rail to develop a plan, with the wider industry, for the start of CP6 which should facilitate the growth of new rail freight business. The plan should include both maximising the use of existing flows and the development of new business/terminal facilities.	*RSP Section 2, Appendix H*	

	6.26	Under this plan the Scottish Ministers would require all reasonable steps to be taken to facilitate growth of 7.5% in rail freight traffic carried on the Scotland route, of which, at least 7.5% will represent a growth in new business (i.e. new traffic flows, not previously moving by rail). Both targets should be achieved by the end of CP6 and be measured in net thousand gross tonne miles, relative to the baseline at March 2019.	*RSP Section 2, Appendix H, FNPO SP Section 5*	*Transport Scotland have subsequently clarified that the metric to be used is 'net thousand tonne miles' to reflect product carried rather than be influenced by train weight. The growth target is for net freight tonnage at March 2024 to be at least 107.5% of the CP5 end position as at March 2019; coal traffic is excluded from the calculation. Further, the 'new business target' has been clarified to mean that of the total net freight tonnage as at March 2024 7.5% should represent product new to rail in CP6.*
A greener Scotland	6.27	Emissions' reductions are a priority for a sustainable Scottish economy. Our Climate Change plans include proposals for new and more testing emissions reduction targets for 2020. Whilst rail is already a low contributor of total transport emissions, investment strategies must become more sustainable to provide a contribution to overall emissions reductions and to ensure enhanced network resilience from adaptation interventions.	*RSP Section 8, STE SP Section 4*	
	6.28	During CP6 the Scottish Ministers require Network Rail to work with the industry to develop and deliver a metric for continuous carbon emissions' reductions which is normalised to cover passenger and freight volumes and set against the baseline at the 31 March 2019. A metric should also be produced for measure in CP6 which drives behaviours to reduce overall traction and non traction energy use by the end of CP6.	*RSP Section 8, STE SP Section 4*	
	6.29	The Scottish Ministers also require Network Rail to work with the rail industry to develop and apply suitable KPIs for monitoring the impact and mitigation of climate change upon network disruption and the means of measuring the benefits of adaptation interventions.	*RSP Section 8, STE SP Section 4*	
	6.30	With the aim of monitoring and reducing the overall environmental impact of rail, the Scottish Ministers require the rail industry to report and build on the existing measures for the overall reduction in environmental impact.	*RSP Section 8, STE SP Section 4*	

Asset manage-ment	6.31	The Scottish Ministers require Network Rail to adopt an asset management strategy in CP6, including policies as well as operational practice, focussed on reliability, resilience, safety, sustainability, and value for money. The asset management strategy should also clearly reflect the specific needs of the network in Scotland and its users and should be fully aligned to the Scottish Ministers' priorities.	*RSP Section 5*	
	6.32	Experience in previous Control Periods has shown that incomplete or inaccurate asset data has led to risks, delays and costs for the wider industry and funders. Asset management and investment in enhancement projects in Scotland must be underpinned by accurate asset data, including gauge information, which is consistently maintained at an A2 standard as a minimumand appropriate Network Capability statements to allow customers to make informed business decisions. Where it represents and can clearly demonstrate value for money, Network Rail's asset management strategy should include the increased rollout of Intelligent Infrastructure Monitoring and Remote Control Monitoring of assets across the network.	*RSP Section 5*	
	6.33	Network Rail's renewals programme represents a significant capital investment for the Scottish Ministers and as a result the Scottish Ministers would expect to review and approve, before the start of CP6, the Scotland route policies for the CP6 renewals programme, including the long-term approach to and technical strategy for signalling assets on the Scottish network. The Scottish Ministers would expect that the renewals policies for Scotland would: - deliver a safe and resilient network - align with the Scottish Ministers' Strategic Priorities for rail - integrate as part of the Investment Strategy, making best use of opportunities for coordination with major enhancement works - facilitate demonstrably efficient delivery and value for money - deliver stable work-banks and thus a stable resource base and supply chain in Scotland linked to the expectations of the Scottish Ministers outlined in paragraph 4.1 above	*RSP Section 5*	*See comments as per 3.4.*
	6.34	Any changes to Network Rail's policies or programmes which will result in the deferral or cancellation of major or significant levels of renewal works will require consultation with and approval by Transport Scotland.	*N/A*	*See comments as per 3.4.*

Stations	6.35	All stations shall be maintained to an average asset condition as in place at the 31 March 2019 and in a manner that facilitates the operator of the ScotRail franchise to fulfil its obligations under the current or any future Service Quality Incentive Regime (SQUIRE).	*RSP Section 5*	
	6.36	Customer Information Systems (CIS) at stations enable customers to make rational and informed decisions during normal network operation and also during disruptive events resulting in the reduction of overcrowding and consequently dwell time at stations, assisting normal operation and service recovery. The Scottish Ministers require Network Rail to work with the rail industry to deliver a measurable improvement to the customer experience bythe end of CP6 through improved, and more consistent CIS with no reduction in the customer experience through CP6.	*RSP Section 6, Telecoms SP Section 2*	
Depots and stabling strategy Support for the rural economy & tourism	6.37	The Scottish Ministers require that Network Rail will cooperate with the wider rail industry to develop sufficient strategic depot and stabling capability plans for at least the next 15 years, supporting the growth in passenger services predicted and the rolling stock strategies set out in Franchise Agreements and any planned variations. As part of this process, consideration should be given to current and expected gaps in servicing and stabling capability, identifying value for money options to support more efficient rolling stock operations. This strategy should be based around the appropriate exploitation of existing railway assets; using/adapting stations where possible and then the consideration of new depots.	*RSP Appendix D*	
	6.38	The Scottish Ministers require that Network Rail will maintain and deliver track access to support the reasonable requirements of charter, tourist and other special trains, ensuring that all required approvals and pathways are confirmed to operators in sufficient time so as to enable normal business planning and marketing activity to be undertaken with certainty. The Scottish Ministers would expect gauging to be covered by this requirement and, to the extent that the Scottish Gauge Requirement is not sufficient, where specific gauging exercisesare required, that these are undertaken at Network Rail's cost and in sufficient time to allow services to run as planned.	*System Operator SP Section 3a*	*As per 6.3.*

	6.39	Timetabling with respect to rural services should be informed by specialist local knowledge so as to ensure integration with bus and ferry services.	*System Operator SP Appendix C*	
	6.40	Vegetation clearance on rural and scenic routes should be controlled and maintained so as to facilitate views from the train, and to prevent damage to trains (including those of charter operators), such as damage to paintwork and exterior finish.	*RSP Section 5*	
Railway assets	6.41	Whilst it remains the position that no railway assets on the Scottish network should be sold or disposed of without the express approval of the Scottish Ministers, it is acknowledged that opportunities may exist to exploit the potential of the extensive Scottish commercial and operational asset base to the benefit of funders, rail users or proximal communities	*RSP Section 6, Property SP section 5.2*	
	6.42	The Scottish Ministers require Network Rail to optimise the availability of redundant or underused assets, including land, for the benefit of the local community. Where Network Rail looks to relieve itself of the burden of assets by identifying a more appropriate party (or parties) that could discharge thatobligation, it should first undertake a thorough assessment of the potential for railway use in the future.	*RSP Section 6, Property SP section 5.2*	
	6.43	Network Rail should cooperate fully with Transport Scotland and the Scottish Government to examine areas where Network Rail's digital assets can support passengers services where digital connectivity is limited or currently missing, or where the assets can support digital coverage for remote and rural communities.	*RSP Section 6, Telecoms SP Section 9*	
Safety	6.44	It remains the responsibility of the Secretary of State to specify safety requirements for the whole of the GB rail network and the Scottish Ministers will work closely with the Secretary of State to ensure that the interests of Scotland's railways are fully reflected.	*RSP Section 4*	

Access-ibility	6.45	It remains the responsibility of the Secretary of State to specify accessibility requirements for the whole of the GB rail network and the Scottish Ministers will work closely with the Secretary of State to ensure that the interests of Scotland's railways are fully reflected and will look to support accessibility initiatives through the Investment Strategy.	*N/A*	
	6.46	In accordance with their status as a public sector organisation covered by the Equality Act 2010, Network Rail should comply with all associated public sector equality duty requirements.	*RSP Section 8*	

Appendix K Regulatory floors methodology

CRM-P regulatory floor methodology

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:

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).

Sustainability regulatory floor methodology

The Sustainability assurance has identified a small part of the overall plan that can 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.