

Scotland Route Strategic Plan

March 2019

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1. Foreword and summary

Foreword by Alex Hynes, MD, ScotRail Alliance.



Our vision is to build ***the best railway Scotland has ever had***. Already more popular than at any time in the last 150 years, more than 97 million journeys are made every year on Scotland's railway, that's nearly a third more than a decade ago. This popularity is expected to continue with passenger numbers forecast to double on many routes through Scotland's main stations. The railway 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 with over 160 suppliers.

We continue to contribute to Scotland's economy, and are focused on delivering a safe, punctual and reliable service every day for passenger and freight customers in Scotland and on cross border services – we will not compromise. We are protecting the resilience of the railway by investing in the infrastructure to address recent weather-related challenges and to protect against ongoing extreme weather conditions. 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.

New electric trains will offer more seats and faster journeys on many of our key routes and we are re-creating a true inter-city network between our seven cities, offering passengers a superb quality of service. We are increasing the number of carriages by over 25%, that's an extra 100,000 seats for our passengers every day, and we are making travel hassle-free by rolling out queue busting smart ticketing right across the network. 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. We will support our freight customers to grow their business in Scotland.

Over the last five years Scotland's Railway has seen unprecedented levels of investment and change as it has delivered new and upgraded railway infrastructure and trains onto the network. Looking ahead to Control Period 6, our priority is to provide an enhanced level of service to our customers - passengers and freight - and to do that we will continue to invest to build the best railway Scotland has ever had.

Response to the Final Determination

Network Rail welcomes ORR's conclusions in their final determination (FD) that our plans are well founded, and broadly meet the requirements of the Scottish High Level Output Specification (HLOS), while recognising that work remains ongoing to develop plans to deliver some of the HLOS requirements. Together with ORR we have published an HLOS Tracker, which shows how Network Rail Scotland Route, System Operator and Freight and National Passenger Operators (FNPO) intend delivering these requirements. A number of these require coordinated activity across the industry (for example, including passenger and freight operators) and we anticipate ongoing engagement with ORR and Transport Scotland to track the role each party will play in delivering these plans.

Key stakeholders

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, LNER, Virgin West Coast, TransPennine Express, Caledonian Sleeper, CrossCountry, Charter operators and Freight operators (Direct Rail Services (DRS), GB Railfreight, DB Cargo UK, Colas, Freightliner). 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.

Key plan changes since SBP

Category	Description of significant change	Impact on plan £m
Cost (CAPEX)	Net £16m decrease in CAPEX plan due to: increases of £101m (additional funding allocated in FD for Carstairs £57m and bridge replacement £23m; reallocation from OPEX of parapet handrail replacement programme £14m; transfer of centrally allocated management CAPEX to route costs £7m), offset by reductions of £117m (efficiency challenge and review of headwinds (£62m), reallocation of activities to OPEX - primarily the asset improvement programme (£55m)).	(£16m)
Cost (OPEX)	Net £57m increase due to: £41m net effect of reallocations between OPEX and CAPEX described above and £18m increase in resources for Off track, Electrification, Weather resilience and other changes (including removal of toilet charge income and increase in Safety Directorate resources)	£57m
Volumes	A small reduction in Track volumes of 4% or 18 units of S&C and 1% or 8km of plain line to fully fund the current AFC of the Carstairs renewal, noting that in the event this renewal reduces in cost from the current £150m to the £103m figure noted in the FD the intent will be to restore these track volumes to the plan. If the renewal can be delivered at lower than £103m then the use of the delta between £103m and the AFC will be subject to a tripartite discussion between ORR and TS per the FD.	N/A
Performance	Our performance trajectory included in the SBP was caveated to reflect the uncertainty over our ability to deliver 92.5% in the early years of CP6. We subsequently presented a revised trajectory of 90.5%, 91.5% and 92.5% for years one to three, and this was reflected in the FD. This trajectory has not been changed for the Delivery Plan.	N/A
Scorecard	Safety and asset management scorecard elements adjusted for consistency across all NR routes. Locally driven customer measures updated in line with HLOS requirements (power usage and introduction of border presentation indices in shadow mode).	N/A
Strategies to deliver HLOS requirements	Following publication of the SBP strategies have been developed to respond to specific elements of the HLOS (Gauging Strategy, Journey Time Strategy, Freight Growth Strategy and Efficient Electrification Strategy). These documents are references within this Strategic Plan and will be published separately prior to CP6.	N/A
	Total cost changes	£41m

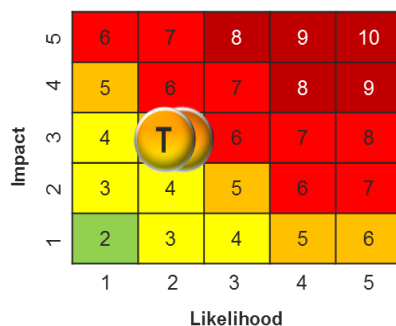
Summary CP6 Plan

Summary CP6 (cash prices)

	CP5 (£m)	CP6 (£m)						CP7 (£m)	
	18/19	19/20	20/21	21/22	22/23	23/24	CP6 Total	24/25	25/26
Operations	67	74	63	64	65	67	332	69	71
Maintenance	165	164	161	160	164	166	815	172	177
Risk	0	0	36	67	94	108	306		
Total Renewals	326	325	461	430	395	297	1,909	395	407
Digital Railway	0	0	0	0	0	0	0	0	0
Total Renewals + Digital Railway	326	325	461	430	395	297	1,909	395	407
Total expenditure	558	564	721	721	717	638	3,362	635	655

Table 1.0 - Route strategic plan financial summary CP6

Safety

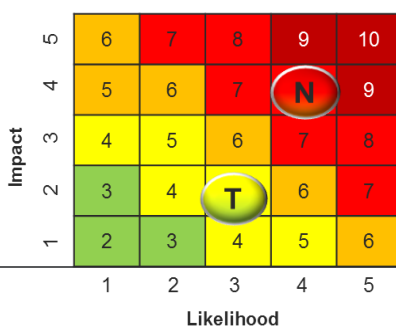


The biggest safety driver is the delivery of the core OMR plan, which for all assets has a strong bias towards sustaining safe infrastructure, where we plan to sustain the delivery of outputs between CP5 and CP6.

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.

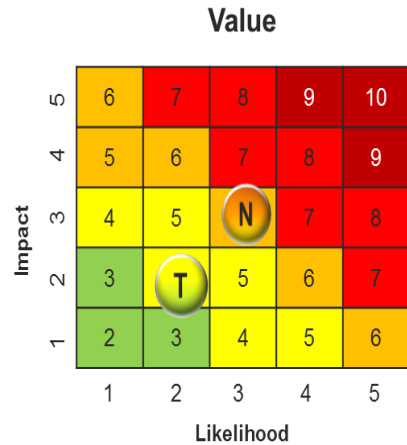
The plan reflects guidance from Professional Heads on addressing safety and legislative risks.

Performance



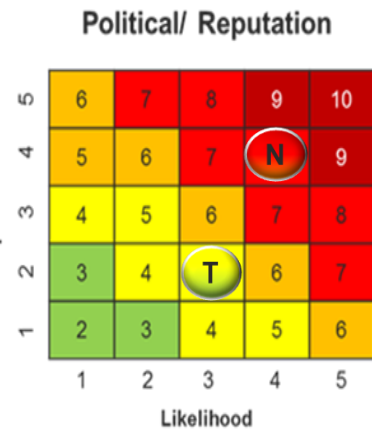
The net score shown here reflects our forecast CP5-exit position and Train performance is subject to close political, regulatory and media scrutiny. Delivery of the various performance plans and initiatives is critical to recovering performance which will in turn drive an improved reputational and political position. We will then aim to sustain this level of performance while supporting passenger growth through CP6.

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.



The net 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 work bank 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 risk include reviewing access regimes and commercial strategies. Challenges we will need to address include the impact of other Routes' delivery strategies and wider market forces such as major enhancements, and HS2.



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

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



Projected position at end of CP5



Target position at the end of CP6

2. Route objectives

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

CP6 Long-term scorecard

Scotland										
Long Term Scorecard - RF11			CP6						CP7	
Safety - (20%)	Targets	Weighting	19/20	20/21	21/22	22/23	23/24	24/25	Achievability	
Lost Time Injury Frequency Rate (LTIFR)	Worse than Target	5.0%	0.380	0.340	0.290	0.240	0.190	0.180		
	Target		0.360	0.320	0.270	0.220	0.170	0.160		
	Better than Target		0.340	0.300	0.250	0.200	0.150	0.140		
Risk Management Maturity Model (RM3)	Worse than Target	5.0%	6	6	6	6	6	6		
	Target		8	8	8	8	8	8		
	Better than Target		10	10	10	10	10	10		
Train Accident Risk Reduction (TARR)	Worse than Target	5.0%	60%	60%	60%	60%	60%	60%		
	Target		80%	80%	80%	80%	80%	80%		
	Better than Target		100%	100%	100%	100%	100%	100%		
Top 10 Milestones to Reduce Level Crossing Risk	Worse than Target	5.0%	6	6	6	6	6	6		
	Target		8	8	8	8	8	8		
	Better than Target		10	10	10	10	10	10		
Financial Performance - (20%)	Targets	Weighting	19/20	20/21	21/22	22/23	23/24	24/25	Achievability	
Financial Performance Measure (FPM) – Gross Profit & Loss	Worse than Target	5.0%	-							
	Target		0	0	0	0	0	0		
	Better than Target		-							
Financial Performance Measure (FPM) – Gross Renewals	Worse than Target	5.0%	-							
	Target		0	0	0	0	0	0		
	Better than Target		-							
Financial Performance Measure (FPM) – Gross Enhancements	Worse than Target	5.0%	-							
	Target		0	0	0	0	0	0		
	Better than Target		-							
Cash Compliance	Worse than Target	5.0%								
	Target									
	Better than Target		0	0	0	0	0	0		

Investment - (10%)	Targets	Weighting	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Top Investment Milestones	Worse than Target	10.0%	80%	80%	80%	80%	80%	80%	
	Target		90%	90%	90%	90%	90%	90%	
	Better than Target		100%	100%	100%	100%	100%	100%	
Asset Management - (10%)	Targets	Weighting	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Renewals – 7 Key Volumes	Worse than Target	5.0%	90%	90%	90%	90%	90%	90%	
	Target		95%	95%	95%	95%	95%	95%	
	Better than Target		100%	100%	100%	100%	100%	100%	
Composite Reliability Index (CRI)	Worse than Target	2.5%	1.5%	3.0%	4.6%	6.1%	7.7%	1.5%	
	Target		2.0%	4.0%	5.9%	7.8%	9.6%	2.0%	
	Better than Target		2.5%	5.1%	7.7%	9.8%	12.3%	2.5%	
Composite Sustainability Index (CSI)	Worse than Target	0.0%	-	-	-	-	2.3%	-	
	Target		-	-	-	-	2.6%	-	
	Better than Target		-	-	-	-	2.6%	-	
Number of Service Affecting Failures (SAF)	Worse than Target	2.5%	2,667	2,640	2,614	2,588	2,562	2,536	
	Target		2,640	2,587	2,536	2,485	2,435	2,386	
	Better than Target		2,627	2,561	2,497	2,435	2,374	2,314	
Train Performance - (20%)	Targets	Weighting	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Consistent Route Measure – Performance (CRM-P) Network Rail Caused Delay Minutes	Worse than Target	0.0%	1.11	1.11	0.94	0.94	0.93	0.93	
	Target		1.06	0.96	0.89	0.89	0.88	0.88	
	Better than Target		1.01	0.91	0.84	0.84	0.83	0.83	
Freight Delivery Metric (FDM-R)	Worse than Target	3.0%	93.5%	93.5%	93.5%	93.5%	93.5%	93.5%	
	Target		94.5%	94.5%	94.5%	94.5%	94.5%	94.5%	
	Better than Target		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	
Abellio ScotRail PPM	Worse than Target	9.0%	90.5%	91.5%	92.0%	92.0%	92.0%	92.0%	
	Target		92.5%	92.5%	92.5%	92.5%	92.5%	92.5%	
	Better than Target		93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	
Abellio ScotRail Cancellations (NR responsibility)	Worse than Target	1.0%	1.4%	N/A	N/A	N/A	N/A		
	Target		1.3%	-	-	-	-		
	Better than Target		1.2%	N/A	N/A	N/A	N/A		
Summer preparedness milestones delivered	Worse than Target	1.0%	80.0%	N/A	N/A	N/A	N/A		
	Target		90.0%	-	-	-	-		
	Better than Target		100.0%	N/A	N/A	N/A	N/A		
Autumn preparedness milestones delivered	Worse than Target	1.0%	80.0%	N/A	N/A	N/A	N/A		
	Target		90.0%	-	-	-	-		
	Better than Target		100.0%	N/A	N/A	N/A	N/A		
Glasgow DU ScotRail Infrastructure PPM failures	Worse than Target	1.0%	7,400	N/A	N/A	N/A	N/A		
	Target		7,250	-	-	-	-		
	Better than Target		7,100	N/A	N/A	N/A	N/A		
Caledonian Sleeper Right Time Arrivals	Worse than Target	2.0%	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%	
	Better than Target		81.0%	81.0%	81.0%	81.0%	81.0%	81.0%	
Cross Country Right Time Departures from Edinburgh Waverley (BPI)	Worse than Target	2.0%	82.0%	83.0%	83.0%	83.5%	83.5%	83.5%	
	Target		84.5%	85.0%	85.0%	85.5%	85.5%	85.5%	
	Better than Target		87.0%	87.0%	87.0%	87.5%	87.5%	87.5%	

Locally Driven Customer Measures - (20%)			Targets	Weighting	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Passenger Satisfaction (NRPS Abellio ScotRail)	Worse than Target	5.0%	88%	88%	88%	88%	88%	88%	88%		
	Target		90%	90%	90%	90%	90%	90%	90%		
	Better than Target		92%	92%	92%	92%	92%	92%	92%		
Scottish Freight Growth on Baseline	Worse than Target	3.0%	1.0%	2.5%	3.5%	5.5%	7.0%				
	Target		1.5%	3.0%	4.5%	6.0%	7.5%				
	Better than Target		3.5%	5.0%	6.5%	8.0%	9.5%				
Abellio ScotRail Average Timetabled Minutes per Mile Travelled	Worse than Target	3.0%	1.586	1.584	1.582	1.581	1.578	1.578	1.578		
	Target		1.584	1.582	1.581	1.578	1.576	1.576	1.576		
	Better than Target		1.582	1.581	1.578	1.576	1.574	1.574			
Abellio ScotRail Passenger Numbers (million pasenger journeys)*	Worse than Target	2.0%	98.5	N/A	N/A	N/A	N/A				
	Target		103.1	-	-	-	-	-	-		
	Better than Target		104.5	N/A	N/A	N/A	N/A				
Average Speed of Freight Services, % Improvement	Worse than Target	2.0%	0.0%	1.5%	3.0%	4.0%	5.0%				
	Target		1.8%	3.0%	6.0%	8.0%	10.0%	-			
	Better than Target		2.5%	6.0%	9.0%	12.0%	15.0%				
Employee Engagement Survey, % Engagement	Worse than Target	3.0%	64%	68%	71%	73%	75%	77%	-		
	Target		68%	71%	73%	75%	77%	-			
	Better than Target		72%	78%	75%	77%	79%				
Non-Traction Energy Usage, % Reduction	Worse than Target	2.0%	1.0%	5.0%	9.0%	13.0%	16.0%				
	Target		3.0%	7.0%	11.0%	15.0%	18.0%	-			
	Better than Target		3.5%	7.5%	11.5%	15.5%	18.5%				
CrossCountry Northbound Border Presentation Index (BPI)	Worse than Target	0.0%	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
	Target		1.00	1.00	1.00	1.00	1.00	1.00	1.00		
	Better than Target		1.10	1.10	1.10	1.10	1.10	1.10	1.10		
LNER Northbound Border Presentation Index (Time-to-10)	Worse than Target	0.0%	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
	Target		1.00	1.00	1.00	1.00	1.00	1.00	1.00		
	Better than Target		1.10	1.10	1.10	1.10	1.10	1.10	1.10		
Virgin Trains West Coast Northbound Border Presentation Index (Time-to-10)	Worse than Target	0.0%	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
	Target		1.00	1.00	1.00	1.00	1.00	1.00	1.00		
	Better than Target		1.10	1.10	1.10	1.10	1.10	1.10	1.10		
Trans Pennine Express Northbound Border Presentation Index (Time-to-10)	Worse than Target	0.0%	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
	Target		1.00	1.00	1.00	1.00	1.00	1.00	1.00		
	Better than Target		1.10	1.10	1.10	1.10	1.10	1.10	1.10		
LNER Southbound Border Presentation Index (Time-to-3)	Worse than Target	0.0%	0.81	0.81	0.81	0.81	0.81	0.81	0.81		
	Target		0.85	0.85	0.85	0.85	0.85	0.85	0.85		
	Better than Target		0.89	0.89	0.89	0.89	0.89	0.89	0.89		
Virgin Trains West Coast Southbound Border Presentation Index (Time-to-3)	Worse than Target	0.0%	0.78	0.78	0.78	0.78	0.78	0.78	0.78		
	Target		0.82	0.82	0.82	0.82	0.82	0.82	0.82		
	Better than Target		0.86	0.86	0.86	0.86	0.86	0.86	0.86		
Trans Pennine Express Southbound Border Presentation Index (Time-to-3)	Worse than Target	0.0%	0.86	0.86	0.86	0.86	0.86	0.86	0.86		
	Target		0.90	0.90	0.90	0.90	0.90	0.90	0.90		
	Better than Target		0.94	0.94	0.94	0.94	0.94	0.94	0.94		
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										

Long-term scorecard / customer & stakeholder alignment

Through the ScotRail Alliance, we are working together as one railway in Scotland to improve performance for all our passenger and freight operators.

Our long-term scorecard includes both national and locally selected metrics. National metrics were specified by NR Group and or ORR to support comparison across routes while train performance and locally driven metrics were developed from our stakeholder workshops with the ORR and Transport Scotland providing separate validation for both.

To ensure our stakeholder workshops were strategic and customer-focused, we limited invitees to our direct TOC and FOC customers, and our key national and Route based stakeholders as outlined in the Table 2.0 below.

CP6 customer / stakeholder workshop invitees		
Abellio ScotRail	Direct Rail Services	ORR
Caledonian Sleeper	London North Eastern Railways	Transport Scotland
Cross-Country	Freightliner	First Group
DB Cargo UK	Colas	Rail Delivery Group
Virgin West Coast	TransPennine Express	FNPO
GB Railfreight		

Table 2.0 - CP6 customer / stakeholder workshop invitees

The workshops enabled us to develop a deeper understanding of their ongoing requirements and priorities for CP6. Consultation has also taken place with the FNPO team to align metrics and targets with Freight and cross border operators. The targets in the scorecard have been supported by stakeholders since they align with both targets shared in the HLOS and franchise targets.

The long-term scorecard has been consulted with customers via the stakeholder workshops. It has also been the subject of separate discussion with ORR and Transport Scotland. Appendix A contains detailed content regarding our Stakeholder engagement activities.

The Long-Term Injury Frequency Rate (LTIFR) target is set to reflect Network Rail's national aspiration to benchmark against other industries who lead on safety.

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 - While we fully support the intent of working towards 92.5%, we believe that this is unlikely to be achieved from the start of CP6, and this view has been reinforced by performance trends since the publication of the SBP in February 2018, with current PPM (P10 2018/19) standing at an MAA of 87.3%. An independent review into the train service performance delivered by the ScotRail Alliance was concluded at the beginning of 2018/19, and this review produced 20 recommendations across the Alliance for what needs to be done to work towards delivering a sustainable 92.5% MAA PPM.

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 but the Route is committed to achieving these targets.

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 to achieve targets. Note: Abellio ScotRail passenger numbers are commercially sensitive and are subject to ongoing discussions between the Route and Abellio ScotRail. The intent is that these targets will not be forecast through the Control Period but will be set on an annual basis. Carbon Reduction has been replaced with % reduction in non-traction energy usage following discussions with Transport Scotland. In response to stakeholder feedback from cross border operators and Transport Scotland's HLOS requirements for a revised suite of performance metrics we have developed a series of "border presentation" indices, these will appear on the scorecard in year one in shadow mode while we base line the metrics.

Regulatory floors - 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 Table 2.1 below, will act as a level below which ORR would consider undertaking formal investigation for licence breach.

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%

Table 2.1 – Regulatory floor metrics

Asset Management measures, 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). Service Affecting Failure metrics are subject to revision at the end of the control period.

3. Safety

3.1. Safety objectives

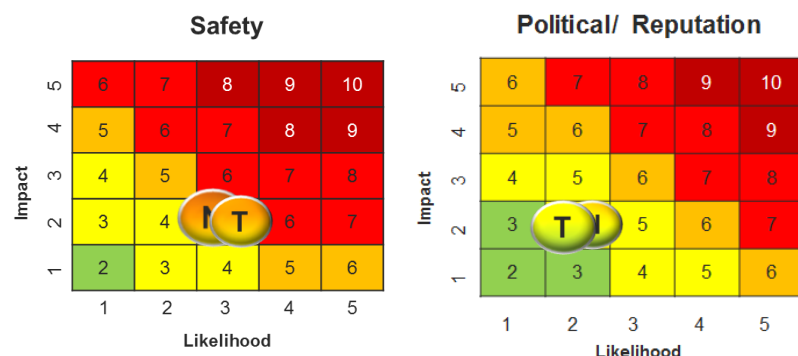
Safety - (20%)	Targets	Weighting	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Lost Time Injury Frequency Rate (LTIFR)	Worse than Target	5.0%	0.380	0.340	0.290	0.240	0.190	0.180	
	Target		0.360	0.320	0.270	0.220	0.170	0.160	
	Better than Target		0.340	0.300	0.250	0.200	0.150	0.140	
Risk Management Maturity Model (RM3)	Worse than Target	5.0%	6	6	6	6	6	6	
	Target		8	8	8	8	8	8	
	Better than Target		10	10	10	10	10	10	
Train Accident Risk Reduction (TARR)	Worse than Target	5.0%	60%	60%	60%	60%	60%	60%	
	Target		80%	80%	80%	80%	80%	80%	
	Better than Target		100%	100%	100%	100%	100%	100%	
Top 10 Milestones to Reduce Level Crossing Risk	Worse than Target	5.0%	6	6	6	6	6	6	
	Target		8	8	8	8	8	8	
	Better than Target		10	10	10	10	10	10	

Key stakeholder priorities	Response
Train crew risk of slips, trips and falls on operational infrastructure (Freight Operators)	Scotland Route will work with FNPO on appropriate use of the Freight safety fund to improve walkways and lighting in depots and sidings.
Improved management of vegetation (all operators including Charter Operators, ORR)	Our plan continues our CP5 focus on major vegetation clearance and strengthens our off-track maintenance resource to better maintain the vegetation on the overall network. We have also included funding specifically aimed at clearance of vegetation on our scenic routes.
No repeat to major line closure on east / west coast due to scour (Cross border operators)	We are targeting to remove all high-risk scour sites in CP6.
Improved welfare facilities (Trade Unions)	During CP5 we have commenced a welfare improvement project, this will be concluded in the early years of CP6 with ongoing additional OPEX costs included in the plan.

3.2. Safety activity prioritisation and risk outcome

No.	Key objective drivers (constraints, risks and opportunities)	What we plan to do	Owner	Timescale (Start and Finish)
1	(R) Lost time injuries to workforces	Scotland Route manages the risks of track workers coming into contact with trains through our ban on unprotected working with unassisted lookouts. However, this has meant that most work takes place during the hours of darkness which introduces its own unique set of challenges particularly around slips, trips and falls. Therefore, the focus for the Route will be on improved site lighting such as fixed installations at key junctions to be delivered during renewals and environmentally friendly temporary installations at transient sites of work. The Route will also focus improving daytime access using automated warning systems as an additional means of reducing the slips, trips and falls risk and increased productivity especially as isolation requirements for additional electrification is reducing the length of time available in the no service periods. Products being reviewed include TOWS installations at major signalling renewals schemes, LEWIS and remote TCODs	HRSE & DRAM	Ongoing and throughout CP6
2	(R) Public / Passenger Train Accident Risk	CP6 will see work commence on the evaluation of signal over run risk at plain line signals which will in turn identify signals where there is a significant risk of rear end collision. The outputs from this exercise will drive the implementation of signalling enhancements to reduce the consequence of a train SPaD. Also, we will enhance 10 passive level crossings in long signal sections which will give each user at these crossings a precise and accurate calculation of whether it's safe to cross, in addition we will be 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 AFBT technology recently installed at Ardrossan and AHB+.	HRSE	Ongoing and throughout CP6
3	(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.	STE	Ongoing and throughout CP6
4	(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.	Chief Operating Officer	Ongoing and throughout CP6
5	(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 musculoskeletal injuries experienced by our workforce.	HRSE All line managers	Zero NR caused collisions by end CP6
6	(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.	Chief Operating Officer	End CP6
7	(O) Achieve passenger and freight safety improvements aligned with core OMR 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

8	(O) Achieve public safety improvements through reducing level crossing risk	During CP6 we plan to fund 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 AFB 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 on our infrastructure either through education or engineering controls.	HRSE	Individual milestones through CP6
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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 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.

3.3. Safety strategy

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 3 of this document with a strategy that combines personal leadership with broad employee engagement, through 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 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.

3.3.1. Specific Safety Improvement Schemes

Some of the many safety initiatives being progressed during CP6:

Installation of overlay miniature stoplight systems on ten of our highest risk passive level crossings that are in long signal sections, where it can be difficult for the signaller to establish an accurate position of a train in relation to a level crossing. This is an issue for the signaller, when a user telephones to request permission to cross the line, to determine whether there is sufficient time for the user to safely cross before the train arrives.

The overlay system will give the user a constant indication of whether it's safe to use the crossing or not through a simple red and green light system. The system in most cases will reduce the need for the user to contact the signaller.

Scotland has further enhanced its prohibition on unassisted red zone working by introducing a requirement for all line blockages to have additional protection. This requirement will drive forward an appetite in the Route to install and use innovative line blockage solutions such as LEWIS and ZKL T-CODS along with hard wired TOWS system.

Site access lighting initiatives including fixed locations and innovative temporary lighting solutions for worksites

Delivery of Signal Overrun Assessment Tool (SORAT) assessment programme for plain line signals will identify high risk signals that need intervention to the reduce the risk of a rear end collision if the signal concerned was passed at danger.

3.4. Occupational Health & Wellbeing strategy

Scotland Route will introduce a strategy for all staff that hold a small power plant certification to assess, monitor and review their exposure to vibrating tools. The strategy will apply a recognised hierarchy of control and will start at elimination looking at alternative methods of working, substitution of petrol driven plant for battery powered plant. We will introduce an improved tools monitoring regime using on person dose monitoring to control the amount of exposure received from vibrating tools. In addition, the Route will deliver a comprehensive health assessment scheme with the aim of preventing existing cases from worsening and no new confirmed cases amongst the workforce.

A similar process will be applied for respiratory health where key tasks that create exposure will be identified, an assessment of whether the task can be eliminated or substituted if not then further control measures will be implemented supported by a health assessment and support programme.

Manual handling is one of the biggest accident contributors within the Route with most of slips, trips and falls accidents having some form of manual handling element which contributed to the accident. The key issue with manual handling is the risk of musculoskeletal injuries which can have a long-lasting effect on the injured party with prolonged recovery following injury. The Route will actively engage in finding new tools and equipment which will reduce the manual handling burden. Furthermore, we will upskill our staff in manual handling techniques so the appropriate

method for lifting loads is utilised.

3.5. Security strategy

Critical National Infrastructure (CNI)

Scotland Route has three sites designated by the 'Department for Transport Land Security Division' (DfT) as Critical National Infrastructure (CNI) and as such fall under the regulatory requirements of the National Railways Security Programme (NRSP). Each site, as required by the NRSP has developed an initial 'Local Risk and Vulnerability Review' resulting in a comprehensive risk register which has highlighted any vulnerabilities in both the Physical and Procedural Protection on a sliding scale of Risk. These vulnerabilities are currently being addressed and any outstanding action points in CP5 will be addressed early in CP6. In common with all other routes, this risk assessment process is continuous and in addition staff in these critical sites receive regular security awareness briefings.

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

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

Broader Security Compliance

The Route manages many assets of great significance which, when subject to security breaches can negatively impact on passenger and employee safety, organisational reputation, train performance and business continuity as well as our key stakeholders including Transport Scotland. An enhanced 'Security Culture' with our staff in all areas of the Route is being encouraged and rolled out through training, briefings and e-learning.

For many aspects we will not develop our own strategy but will seek to align with national strategies as described in the CP6 Short Form Strategy (SFS) document, with focus on the Information Technology SFS (Cyber security), Operations SFS (Security risk) and Group Security SFS. Accordingly, we will align our approach with the national strategic security goals as follows:

- Establish and maintain a safe and secure culture supported from the top down
- Safeguarding people by reducing hostile threats, including assault, to the public and our workforce.
- Reduce the impacts of security incidents, route crime and trespass
- Establish and develop clear roles and responsibilities for security
- Create systems that provide clear and relevant security information to stakeholders
- Reduce the cost of security incidents

We will work with the various SFS owners establish a complementary approach to support the above goals.

4. Train performance

4.1. Train performance objectives

Train Performance - (20%)	Targets	Weighting	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Consistent Route Measure – Performance (CRM-P) Network Rail Caused Delay Minutes	Worse than Target	0.0%	1.11	1.11	0.94	0.94	0.93	0.93	
	Target		1.06	0.96	0.89	0.89	0.88	0.88	
	Better than Target		1.01	0.91	0.84	0.84	0.83	0.83	
Freight Delivery Metric (FDM-R)	Worse than Target	3.0%	93.5%	93.5%	93.5%	93.5%	93.5%	93.5%	
	Target		94.5%	94.5%	94.5%	94.5%	94.5%	94.5%	
	Better than Target		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	
Abellio ScotRail PPM	Worse than Target	9.0%	90.5%	91.5%	92.0%	92.0%	92.0%	92.0%	
	Target		92.5%	92.5%	92.5%	92.5%	92.5%	92.5%	
	Better than Target		93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	
Abellio ScotRail Cancellations (NR responsibility)	Worse than Target	1.0%	1.4%	N/A	N/A	N/A	N/A		
	Target		1.3%	-	-	-	-		
	Better than Target		1.2%	N/A	N/A	N/A	N/A		
Summer preparedness milestones delivered	Worse than Target	1.0%	80.0%	N/A	N/A	N/A	N/A		
	Target		90.0%	-	-	-	-		
	Better than Target		100.0%	N/A	N/A	N/A	N/A		
Autumn preparedness milestones delivered	Worse than Target	1.0%	80.0%	N/A	N/A	N/A	N/A		
	Target		90.0%	-	-	-	-		
	Better than Target		100.0%	N/A	N/A	N/A	N/A		
Glasgow DU ScotRail Infrastructure PPM failures	Worse than Target	1.0%	7,400	N/A	N/A	N/A	N/A		
	Target		7,250	-	-	-	-		
	Better than Target		7,100	N/A	N/A	N/A	N/A		
Caledonian Sleeper Right Time Arrivals	Worse than Target	2.0%	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%	
	Better than Target		81.0%	81.0%	81.0%	81.0%	81.0%	81.0%	
Cross Country Right Time Departures from Edinburgh Waverley (BPI)	Worse than Target	2.0%	82.0%	83.0%	83.0%	83.5%	83.5%	83.5%	
	Target		84.5%	85.0%	85.0%	85.5%	85.5%	85.5%	
	Better than Target		87.0%	87.0%	87.0%	87.5%	87.5%	87.5%	

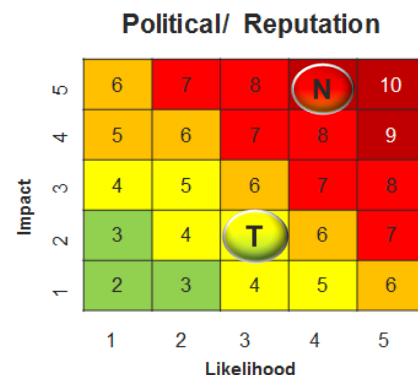
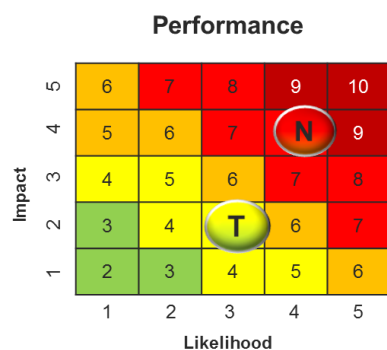
Key stakeholder priorities	Scotland Route Response (as identified in 2017 stakeholder workshops)
Performance resilience across the network (All operators)	Scotland Route are working closely with colleagues at Abellio ScotRail to ensure that improved resilience is built into timetable changes going forward, which will impact the performance of ScotRail services, but due to improved resilience will reduce the impact of late running ScotRail services on Anglo-Scot services
Improving 'On Time' Performance (All operators)	With the industry in England & Wales working to 'On Time' performance metrics in CP6, Scotland Route is also working to improve On Time performance of the railway, however as PPM is the metric by which the ScotRail contract is agreed, PPM will continue to be the primary measure in Scotland. By adopting 'On Time' railway principles and methodologies, performance analysis can be more effectively produced, leading to better performance results.
Improving Right Time departures (All operators)	Like the previous item, by ensuring that 'On Time' principles are adopted, Scotland Route can also work to improve Right Time departures from terminal stations, ultimately leading to services having a better chance of performing On Time throughout their journey, by leaving their origin station at the Right Time.

Ensuring electrification is used to best advantage for all train operators (principally Abellio ScotRail)	Having increased electrified routes available for CP6 will allow the Route to more effectively manage services across the network. Further rolling stock cascade and increased use of electric traction will lead to a more efficient, greener railway that also performs better in both reliability and PPM terms than previous diesel services.
Minimising impact to performance of cross border services (All operators).	Recognising that Anglo-Scottish services can negatively affect ScotRail services and vice versa, Scotland Route is working to minimise the impact of each service type on each other, through both train plan and service intervention.
Border Presentation Index (BPI)	The northbound BPI is an index showing the northbound lateness of arrival at destination vs. lateness of presentation at border, this provides an index showing how effective Scotland Route is at recovering late running services that are cross-border, and measures when Anglo-Scot operators lose time whilst they are entirely within Scotland Route's control area. The southbound index is almost the same, but with lateness of departure vs lateness of presentation to border, again providing an index showing how effective Scotland Route is at bringing the Anglo-Scot service back into its booked path if late departing, or not gaining any additional lateness. These two measures allow Scotland Route to effectively measure how well it is delivering for the respective Anglo-Scot operators whilst the respective operators are entirely within the control of Scotland Route.

4.2. Train performance activity prioritisation and risk outcome

Summary of objectives		Our objective is to deliver a ScotRail PPM of 92.5% by the end of Year 3 CP6 and maintain it through the remainder. CP6 Performance metrics will be enhanced following discussions with Transport Scotland;			
No.	Key constraints, risks and opportunities	What we plan to do	Owner	Customers impacted	Timescale (start/ finish)
1	(C) Delivery of remedial plan	Successfully support ScotRail in delivery of the remedial plan which is intended to remove the franchise from breach levels. As this is a contractual document between Abellio ScotRail and Transport Scotland, Network Rail does not have a formally agreed part of the plan, however Network Rail has submitted an adjunct to this document indicating where support can and will be given in order to deliver a railway that a train operator is capable of running trains at a high level of performance on.	Abellio ScotRail	Abellio ScotRail	Ongoing
2	(O) Implementation of Donovan Recommendations embeds performance improvement in alliance	Following the introduction of the Portfolio Management Office putting controls around the Donovan Recommendations, there is an opportunity following the successful implementation of the Donovan Recommendations that continued delivery of performance improvement initiatives drive performance in a positive direction.	Head of Performance	All Train Operators	Ongoing
3	(C) Traincrew availability & issues continue to detrimentally affect performance	With the introduction of the December Timetable, a number of traincrew and driver issues arose following the running of new rolling stock on the network. These traincrew availability issues have halted temporarily in January 2019 after a holiday embargo. However, from February 2019, this embargo is lifted and traincrew availability may again become an active issue. In addition to this, for continued timetable introductions going forward this traincrew availability should be monitored to ensure deliverability of subsequent timetables.	Abellio ScotRail	Abellio ScotRail	Ongoing
4	(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	Chief Operating Officer	All train operators	Tranche 1 end 16/17. Ongoing through CP6

5	(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
6	(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 Performance	All train operators	Throughout CP6
7	(R) Performance impact of fleet and asset changes, driven by the delivery of significant enhancements.	The introduction of some new fleet has led to a negative impact on Route performance in certain sectors. The rectification of this requires an integrated asset and fleet programme including robust pre-services trials, timetable stress testing and post introduction reviews.	ScotRail Engineering Director	Alliance services	Dec 2020
8	(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 Transport Scotland and ORR on regular basis.	Head of Performance	All train operators	In place and will continue throughout CP6
9	(R) Increased occurrence of extreme weather	In 2018, significant weather events caused 3 times more impact on the network than the 5-year average. With climate change, there is a chance that this increased impact of weather becomes more severe. As such, there is a risk that there is an increased occurrence of these weather events which will adversely affect performance and safety. To mitigate this, there is the opportunity detailed below with information on weather resilience.	DRAM	All train operators	
10	(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.	DRAM	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 and initiatives is critical to recovering performance which will in turn drive an improved reputational and political position. We will then aim to sustain this level of performance while supporting passenger growth through CP6.

4.3. Operational Performance strategy

A key part of the Operational Performance Strategy from the outset of CP6 is the delivery of the Donovan recommendations which are detailed below. In addition to these, Network Rail will support ScotRail with the delivery of the remedial plan by endeavouring to provide infrastructure at a level of which a Train Operating Company can reasonably be expected to run trains with a PPM of at least 90.5% by the end of CP6 Year 1. From the commencement of CP6, a five-year Performance Strategy will be produced by Network Rail which will further detail all of the performance initiatives and schemes which are underway along with a longer-term strategic vision for performance within Scotland's Railway.

The ScotRail franchise commitment to increase passenger journeys by the end of CP6 provides a challenge for performance, due to the link between increased passenger volumes and delay which 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 new rolling stock on the recently electrified Edinburgh to Glasgow, Stirling Dunblane and Alloa and Shotts lines. The introduction of the HST branded as "Inter7City" and the redeployment of the existing diesel fleet. Whilst these interventions have gone 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 performance.

The performance improvement planning process will focus specifically on this area, 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

The Donovan Review in early 2018 generated twenty recommendations that were all subsequently accepted and form a central plank of the ScotRail Alliance's performance improvement plan. Key elements of this plan include:

- measures to improve infrastructure and train reliability
- better infrastructure performance during the autumn; and
- the suspension of skip-stopping, except as a last resort

This focus will continue into CP6 and beyond, underpinned by targeted funding to address small scale local reliability and or performance works. As part of this review, a whole system approach is being taken towards performance management, in alignment with the 6 key areas identified as the 'Donovan model' of a systematic approach on the railway outlined within Figure 4.0 below.

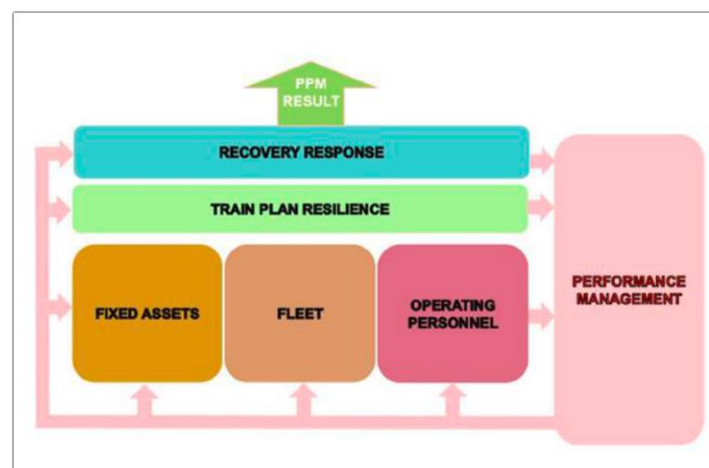


Figure 4.0 – Donovan model

The Performance Management element of the model is the “wrapper” around the system, encouraging collaboration between all aspects and challenging where required to drive a positive performance outcome.

In addition, in collaboration with Abellio ScotRail as our alliance partner, we are empowering their staff to take ownership for performance improvement suggestions. This holistic approach to performance management embeds within the organisation a performance mindset.

Following the full introduction of the 385s and HSTs on the network in the December 2018 timetable change, the subsequent cascade of electric units and 170s into Scotland as part of the ScotRail Alliance ‘Revolution in Rail’ will address the projected increase in passenger numbers through increased seating capacity.

In alignment with the Donovan model, there is an increased focus on leading metrics and indicators within Scotland’s railway. Part of the performance KPI suite which has been submitted to Transport Scotland for CP6 are the Border Presentation Index metrics which indicate how well Scotland Route delivers across all Anglo-Scot operators. In addition to this set of metrics, the rest of the suite reflect the impact of performance on current passenger experience, including at intermediate stations, and attractiveness of rail services to new passengers.

4.4. Capacity and timetabling strategy

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 challenges that the rail network in Scotland will face. Table 4.1 below which has data extracted from the document indicates 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	0.041	1.54	0.03

Table 4.1 – Market growth overview

5. Locally driven measures

5.1. Locally driven objectives

Locally Driven Customer Measures - (20%)	Targets	Weighting	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Passenger Satisfaction (NRPS Abellio ScotRail)	Worse than Target	5.0%	88%	88%	88%	88%	88%	88%	
	Target		90%	90%	90%	90%	90%	90%	
	Better than Target		92%	92%	92%	92%	92%	92%	
Scottish Freight Growth on Baseline	Worse than Target	3.0%	1.0%	2.5%	3.5%	5.5%	7.0%		
	Target		1.5%	3.0%	4.5%	6.0%	7.5%		
	Better than Target		3.5%	5.0%	6.5%	8.0%	9.5%		
Abellio ScotRail Average Timetabled Minutes per Mile Travelled	Worse than Target	3.0%	1.586	1.584	1.582	1.581	1.578	1.578	
	Target		1.584	1.582	1.581	1.578	1.576	1.576	
	Better than Target		1.582	1.581	1.578	1.576	1.574	1.574	
Abellio ScotRail Passenger Numbers (million passenger journeys)*	Worse than Target	2.0%	98.5	N/A	N/A	N/A	N/A		
	Target		103.1	-	-	-	-	-	
	Better than Target		104.5	N/A	N/A	N/A	N/A		
Average Speed of Freight Services, % Improvement	Worse than Target	2.0%	0.0%	1.5%	3.0%	4.0%	5.0%		
	Target		1.8%	3.0%	6.0%	8.0%	10.0%	-	
	Better than Target		2.5%	6.0%	9.0%	12.0%	15.0%		
Employee Engagement Survey, % Engagement	Worse than Target	3.0%	64%	68%	71%	73%	75%		
	Target		68%	71%	73%	75%	77%	-	
	Better than Target		72%	78%	75%	77%	79%		
Non-Traction Energy Usage, % Reduction	Worse than Target	2.0%	1.0%	5.0%	9.0%	13.0%	16.0%		
	Target		3.0%	7.0%	11.0%	15.0%	18.0%	-	
	Better than Target		3.5%	7.5%	11.5%	15.5%	18.5%		
CrossCountry Northbound Border Presentation Index (BPI)	Worse than Target	0.0%	0.90	0.90	0.90	0.90	0.90	0.90	
	Target		1.00	1.00	1.00	1.00	1.00	1.00	
	Better than Target		1.10	1.10	1.10	1.10	1.10	1.10	
LNER Northbound Border Presentation Index (Time-to-10)	Worse than Target	0.0%	0.90	0.90	0.90	0.90	0.90	0.90	
	Target		1.00	1.00	1.00	1.00	1.00	1.00	
	Better than Target		1.10	1.10	1.10	1.10	1.10	1.10	
Virgin Trains West Coast Northbound Border Presentation Index (Time-to-10)	Worse than Target	0.0%	0.90	0.90	0.90	0.90	0.90	0.90	
	Target		1.00	1.00	1.00	1.00	1.00	1.00	
	Better than Target		1.10	1.10	1.10	1.10	1.10	1.10	
Trans Pennine Express Northbound Border Presentation Index (Time-to-10)	Worse than Target	0.0%	0.90	0.90	0.90	0.90	0.90	0.90	
	Target		1.00	1.00	1.00	1.00	1.00	1.00	
	Better than Target		1.10	1.10	1.10	1.10	1.10	1.10	
LNER Southbound Border Presentation Index (Time-to-3)	Worse than Target	0.0%	0.81	0.81	0.81	0.81	0.81	0.81	
	Target		0.85	0.85	0.85	0.85	0.85	0.85	
	Better than Target		0.89	0.89	0.89	0.89	0.89	0.89	
Virgin Trains West Coast Southbound Border Presentation Index (Time-to-3)	Worse than Target	0.0%	0.78	0.78	0.78	0.78	0.78	0.78	
	Target		0.82	0.82	0.82	0.82	0.82	0.82	
	Better than Target		0.86	0.86	0.86	0.86	0.86	0.86	
Trans Pennine Express Southbound Border Presentation Index (Time-to-3)	Worse than Target	0.0%	0.86	0.86	0.86	0.86	0.86	0.86	
	Target		0.90	0.90	0.90	0.90	0.90	0.90	
	Better than Target		0.94	0.94	0.94	0.94	0.94	0.94	

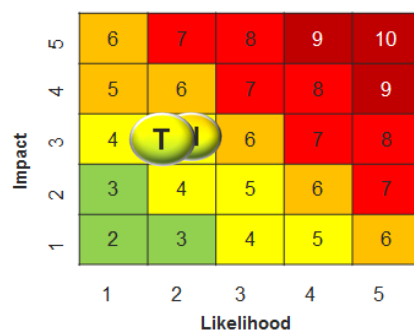
Key stakeholder priorities	Response
Aligning ScotRail franchise commitments with Network Rail business plan targets (ScotRail, Transport Scotland and passenger groups)	Inclusion of NRPS and Journey Time metrics align franchise commitments and NR business plans.
Freight industry aspirations towards growth and Scottish governments commitments to rail freight growth and a low carbon economy (Freight operators and Transport Scotland)	Inclusion of freight growth and average speed metrics underpinned by industry plans to achieve these are a key theme of Scotland Route SO and FNPO plans. Scottish government environmental commitments also reflected in the inclusion of an energy usage metric in the scorecard
Delivery of the HLOS requirements in the transition from CP5 to CP6 (Transport Scotland)	We have, in collaboration with the ORR and Transport Scotland, developed an HLOS tracker that provides a visual means of managing ownership and tracking progress for each of the HLOS requirement milestones.

5.2. Locally driven objectives activity prioritisation and risk outcome

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	Abellio ScotRail	Six-monthly assessment through CP5 & CP6
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 (refer to Appendix I).	Strategy & Planning Director	Abellio ScotRail	March 19 and through CP6
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 (refer to Appendix I)	SRFM	All freight services	March 19 and through CP6

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 kgm, 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 and SO to agree requirements to deliver freight elements of HLOS (refer to Appendix I).	SRFM	All freight services	March 19 and through CP6
5	% reduction in non-traction energy usage	We have appointed an Energy Manager to develop a targeted plan to reduce non-traction energy consumption throughout the control period	DRAM	All	March 19 and through CP6

Political/ Reputation



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.

6. Sustainability & asset management capability

6.1. Sustainability & asset management capability objectives

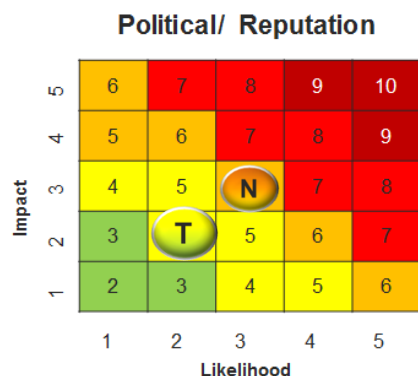
Asset Management - (10%)	Targets	Weighting	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Renewals – 7 Key Volumes	Worse than Target	5.0%	90%	90%	90%	90%	90%	90%	
	Target		95%	95%	95%	95%	95%	95%	
	Better than Target		100%	100%	100%	100%	100%	100%	
Composite Reliability Index (CRI)	Worse than Target	2.5%	1.5%	3.0%	4.6%	6.1%	7.7%	1.5%	
	Target		2.0%	4.0%	5.9%	7.8%	9.6%	2.0%	
	Better than Target		2.5%	5.1%	7.7%	9.8%	12.3%	2.5%	
Composite Sustainability Index (CSI)	Worse than Target	0.0%					2.0%		
	Target		-	-	-	-	2.3%	-	
	Better than Target						2.6%		
Number of Service Affecting Failures (SAF)	Worse than Target	2.5%	2,667	2,640	2,614	2,588	2,562	2,536	
	Target		2,640	2,587	2,536	2,485	2,435	2,386	
	Better than Target		2,627	2,561	2,497	2,435	2,374	2,314	

Key stakeholder priorities	Response
Transport Scotland High-Level Output Specification and Final Determination (Transport Scotland)	We have developed a series of Scottish asset management strategies that reflects asset policy requirements in the Scottish context, including the requirements of Scottish Ministers. Our plans have been developed in line with these strategies. Our reliability targets reflect our understanding of the infrastructure reliability component of performance improvements required to achieve and sustain 92.5% PPM.
Commercial interests of Freight companies and Abellio ScotRail (Abellio ScotRail and Freight Operators)	Freight growth and projected Abellio ScotRail passenger growth targets have been included in the Route's Long-Term Scorecard, this will ensure that the Route maximises the available opportunities within CP6.
Key enhancement milestones, completion of Queen Street station, A21 and Dunbar Platforms in Y1 CP6 (Transport Scotland)	These will be key investment milestones in Y1 CP6, remaining enhancement milestones will be developed in line with the enhancement pipeline.
Completion of Carstairs renewal by Y5 CP6 will be a key cross border priority (Transport Scotland and Cross Border Operators)	This is a strategic renewal proposal for the last two years of the control period and its delivery is key to the sustainability of the Route's track assets as well as potentially delivering improved performance and journey times

Growing the Lothians and Borders (GLAB) enhancement project and Scotland East to England Connectivity (SEtEC) (Transport Scotland)	Edinburgh control system renewal by Y2 CP6 is a key enabler to the GLAB and SEtEC enhancement projects that will deliver increased capacity and resilience in east / central Scotland
Asset performance (Transport Scotland and all Operators)	The delivery of the service affecting failures targets, through focused asset interventions will support the drive to improve performance improvements for the passenger.
Scottish Governments long term sustainable rail network (All Stakeholders)	The delivery of our asset renewal plans for the control period underpins the sustainability of the rail network in Scotland.

6.2. Sustainability & asset management capability activity prioritisation

Summary of objectives		Our objective is to achieve a sustainable asset management plan in line with our Scotland priorities and national asset policies placing focus on initiatives to address risk from severe weather		
No.	Key constraints, risks and opportunities	What we plan to do	Owner	Timescale
1	(C) Enhancements are now planned on a pipeline basis limiting the confirmed long-term view of delivery and therefore our ability to integrate with the renewals programme.	We will continue to develop our renewal plans alongside our enhancement plans and make Transport Scotland and Department for Transport aware of key decision points where renewals will need to progress on a standalone basis.	DRAM	Ongoing through CP6
2	(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.	DRAM	Ongoing from now through CP6
3	(R) Passenger journey times and freight average speed targets	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	Strategy & Planning Dir	First version of strategy produced, will be developed on an ongoing basis
4	(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 DRAMs at the periodic DRAM meeting and Business Plan Integration Group.	DRAM	Ongoing from now through CP6
5	(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	DRAM	Mar 2019
6	(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
7	(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.	DRAM	Year 1 CP6



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.

6.3. Asset by asset key outputs

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.

We have developed individual Scotland asset management strategies for each asset in CP6, translating GB asset policy into a Scottish context. Table 6.0 on the following page outlines the key strategic themes (see Appendix F, Supporting Strategies for further information).

Asset area	Key outputs
Cross-asset prioritisation and maintenance / renewals balance	Cross asset prioritisation was achieved using the company risk model with the strategic aim to align with the asset policies and includes work to improve weather resilience and operational safety. The CP6 maintenance activities were modelled using the ABP tool with volume adjustments to also target improved weather resilience. Our plans make greater allowance (£40m) for Delivery Unit autonomy to identify small scale improvement schemes to drive improved performance.
Track	Our asset strategy aims to build upon the foundations laid in previous control periods that have seen investment have a direct and positive impact on several key asset parameters such as broken rails and defects. It aims to deliver a balanced approach that uses improved asset information, more intuitive data analysis and better understanding of risks, consequences and their controls to deploy the right solution, at the right location at the right time. This will be achieved through the further deployment of train-based measurement and the development of expert systems and tools that support the decision-making processes. Delivery of a safe railway is only part of the equation and this strategy is also focused towards addressing the key performance challenges of the Route including reducing track related delays, speed restrictions and closures. From an asset management perspective this means refining our assessment processes and specifications as well as bringing in new products and technologies. High Output Track Renewal Systems TRS will return to the Route in CP6 and is planned to deliver 84km of re-railing and re-sleepering scope.
Track Gauging	We have worked with Transport Scotland and industry colleagues to develop a Scotland Gauging Strategy. This will be applied to new works within CP6. We are currently in discussions with Transport Scotland over funding the broader implementation of the strategy over the whole network.
Signalling	Our plan is based on continuing to deliver a programme of life extension works – working towards development of long term whole system signalling strategy, and address obsolescence issues by replacing key components. A key objective is to strive to optimise the 'lowest whole life cost' of the signalling asset. For some installations this means undertaking targeted renewal of life expired components or sub systems rather than full renewal where asset condition allows. Obsolescence rather than asset condition is driving the most significant renewal in CP6 of the Signaller's Integrated Electronic Control Centre (IECC) Systems at Edinburgh Signal Centre (ESC).
Level Crossings	Our strategy is to renew our oldest and poorest performing level crossing assets, to upgrade crossings where risk is highest, and provide incremental safety upgrades where full renewal is not planned is to address older automatic crossings on higher speed lines and older AOCL+B crossings to improve reliability and reduce risk. The ten 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.
Structures	The 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, as well as targeted interventions at other sites where scour defects are present. 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 targeted repairs to deck troughing in conjunction with planned track way beam renewals. CP6 will see a move towards less work on large multi-span structures, and a greater proportion of planned work on smaller single span structures. In addition, there will be a greater proportion of work planned on metallic structures with a corresponding decrease on masonry structures due to a change in heavy freight traffic pattern.

Geotechnical	In line with asset policy we prioritise work on cuttings over embankments and on rock cuttings over soil cuttings. We will develop bespoke management plans for our 'Major Earthworks' at Megs Dub on the East Coast Main Line and Glen Douglas on the West Highland Line. We will continue our work on improving the condition of, and increasing the resilience of, tunnel approach cuttings. A landslide or rockfall from these assets presents a high potential consequence to train operation. Work to date has concentrated on netting and bolting rock cuttings with drainage improvements, soil nailing and netting on soil cuttings. Our aim is to reduce the number of earthworks assets susceptible to adverse weather (adverse weather sites) from a starting value of over 600 in CP5 to circa 100 by the end of CP6. We will seek to maximise the advances in technology to install remote failure detection monitoring on these assets and reduce the need for manual inspection during adverse weather. In CP5 an enhanced volume of boundary renewals commenced. Planned to take place over two control periods to recover backlog and reduce the amount of very poor condition fencing. This activity will continue at the same intensity throughout CP6. Vegetation clearance will continue to use a risk model to prioritise locations. It will be contracted through a single delivery team in the Route using a common specification for all projects. The plan will be accelerated to achieve compliance over three control periods instead of the original four. Specific vegetation clearance will be undertaken with regards to treating scenic and rural routes to enhance the passenger experience.
Buildings	The work bank is based on condition led renewals aiming to maintain the average asset condition as at end of CP5. We recognise the impact of the built asset on our customers and will be prioritising the renewal of footbridges, canopies / train sheds and platforms. In addition, whilst undertaking condition-based renewals at four key Glasgow stations, we are taking the opportunity to enhance the customer environment through delivering improved cladding, lighting and surface finishes works. Other significant works include Dundee and Aberdeen station canopy renewals.
E&P	Our CP6 policy prioritises renewals, and weighs interventions, based on the combination of asset condition, obsolescence, and route criticality. Risk based maintenance (RBM) has been introduced for overhead line equipment in Scotland, prioritising high risk features such as 'public area' wire runs, neutral sections, converging wire sites, and critical defects. Improved train borne monitoring will assist with maintenance and lead to improved asset knowledge. The Scottish Ministers' High-Level Output Specification (HLOS) for Control Period 6 remits the Route to review the approach to delivery of electrification projects and to produce an Efficient Electrification Technical Specification. This will consider options to challenge and improve: project delivery strategies, access arrangements, OLE and civils infrastructure design, and industry standards; adopting a risk-based approach. The CP6 Mk 1 OLE renewal programme will commence in Glasgow Central then roll out across the remainder of the asset population throughout CP6 and into CP7/8. For other E&P assets such as signalling power supplies, fixed plant and high voltage distribution we are continuing the programmes of condition-based renewals adopted in CP5.
Telecoms	Asset management policy provides guidance on the approach to asset resilience and associated criticality and CP6 investment in Scotland is primarily targeted at maintaining systems' stability utilising an efficient level of investment. The CP6 strategy continues to focus on providing the Route with telecoms capability, infrastructure and services which enable the safe, secure and efficient operation of the railway. It increasingly focusses on the growing importance to deliver better passenger connectivity. It also supports Network Rail's strategic business plans such as delivering an always connected digital railway for customers, passengers and lineside neighbours, especially remote and rural communities. It is our intention to continue driving service-based outcomes rather than individual asset performance.
Asset data	We will use consistent data specifications for all our renewal and enhancement project and set minimum asset data requirements. Working with Intelligent infrastructure programme to ensure asset data is accurately captured and maintained to support fact-based decision making.

Table 6.0 – Asset management / key strategic themes

6.4. Long run forecast

The asset forecast 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. Budget forecasts for CP6-CP12 are for the Route are shown in Figure 6.0 and Table 6.1 (Refer to Appendix D for asset specific details)

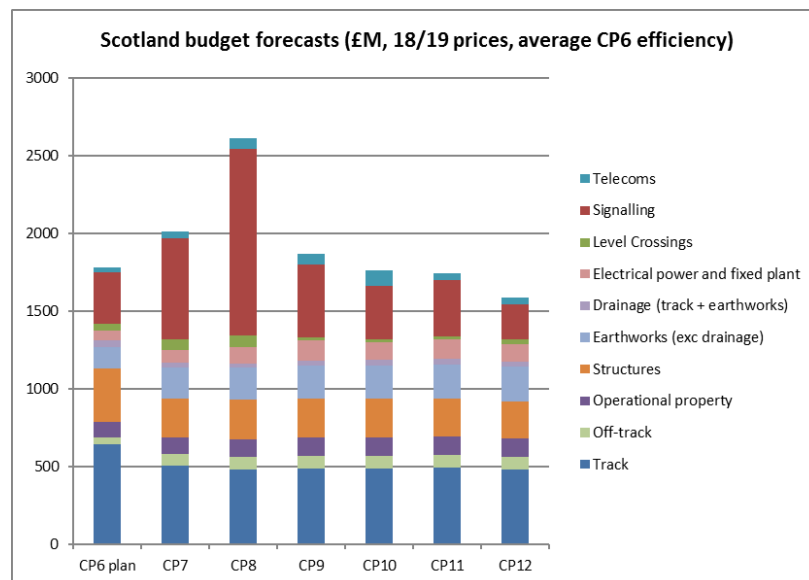


Figure 6.0 – Scotland long term forecast

Scotland	CP6 plan	CP7	CP8	CP9	CP10	CP11	CP12
Track	644	504	484	488	487	495	485
Signalling	330	647	1202	472	345	363	223
Level Crossings	40	71	77	20	18	22	36
Operational property	96	108	112	121	121	121	121
Telecoms	36	41	65	66	97	44	44
Structures	344	249	257	252	253	244	237
Earthworks (exc drainage)	136	200	204	207	212	217	219
Electrical power and fixed plant	63	82	102	128	114	125	108
Off-track	46	79	79	79	79	79	79
Drainage (track + earthworks)	48	29	29	35	35	35	35
All assets	1784	2009	2610	1868	1761	1746	1588

Table 6.1 – Asset management / key strategic themes (note £m18/19)

Expenditure	Average remaining life	Long term consequences and mitigation
Average control period expenditure is modelled at £1.93bn which is approx 9% 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 65% exit CP5 to 54% in exit CP10 when it starts to recover due to Mk3 renewals in line with asset policy. • Signalling power supplies predict a small drop (-5%) in PARL from exit CP6 to exit CP8 then shows a steady improvement through to end CP11 (+20%) • SICA Signalling remaining years fall from 13.3 years in CP6 to 12.9 years in CP7 then peaks at 18.5 in CP9 then falling back to 12.6 by the end of CP12 • 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 14.8% in CP5 to 10.2% by CP12.	Over the seven periods the average expenditure is 9% higher than submitted for CP6 (@£1.93bn average per CP, with a maximum CP spend in CP8, £2.6bn. This is due to the impact of 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. There is some uncertainty in future signalling costs. The significant spike in CP7 and CP8 reflects the current requirement for replacing signalling assets based on existing conventional signalling systems. As part of our development of a long-term whole system signalling strategy we will be considering the optimal approach to integrating train cascade and new vehicle introduction with train control systems including new technologies. This may significantly change future cost forecasts.

Overall the modelled impact of both the scenarios on the combined sustainability index (CSI) is shown below in Figure 6.1.

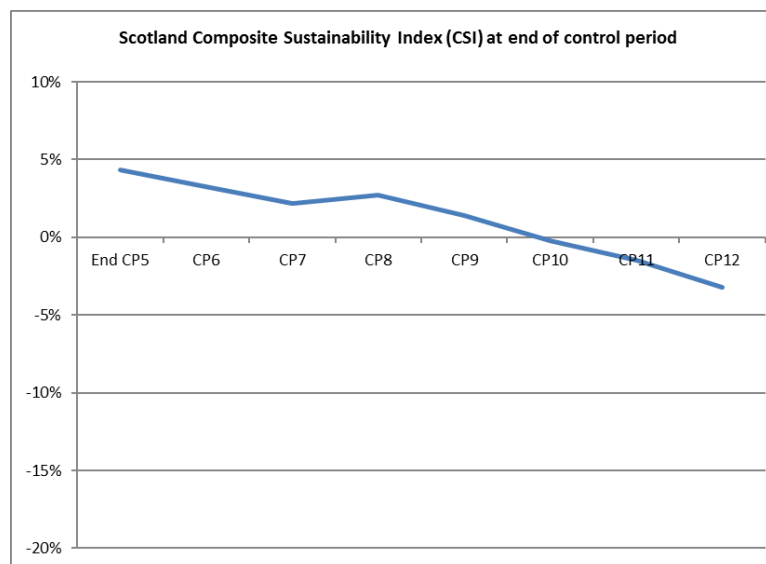


Figure 6.1 – Scotland composite sustainability index (CSI)

6.5. Sustainable Development strategy

Our sustainable development strategy is ambitious. We want to contribute to a sustainable society and create a legacy for future generations. This encompasses working with local suppliers to encourage and promote the use of rail as a new method of transporting people and freight. It involves the reuse of redundant operational land and assets for the benefit of the local community use while protecting the network for future use and it recognises that sustainable business ethics are essential for the delivery of a safe operational railway with potential environmental and social impacts effectively managed. Our strategy will result in real action and lead to positive change, beyond compliance. Our commitments, structured around triple bottom line and outlined below, are based on the United Nation's 17 Sustainable Development Goals, with recognition of the Scottish Governments National Outcomes, the RSSB's Sustainable Development Principles, and multiple internal policies and other strategies including Network Rail's Responsible Railway Plan.



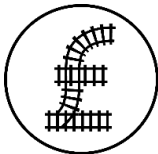
Environmental Stewardship: We understand our responsibility to quantify and value our stock of natural resources; water, land, clean air, to promote biodiversity and minimise nuisance and carbon emissions. Over the next five years we will:

- Use water efficiently
- Ensure activities do not negatively impact the natural environment
- Increase energy efficiency to meet regulatory targets for carbon and energy reduction by remitting efficient design solutions
- Manage our land to balance safety and ecological requirements
- Actively manage invasive non-native species on railway land
- Make our network resilient to weather impacts and future changes in climate
- Reduce our waste and strive towards a circular economy



Social Responsibility: We understand that if we nurture and grow the skills, knowledge and good health of our staff our business will flourish. We will promote a network of relationships and collaborate with our stakeholders to better fulfil our social responsibilities. Over the next five years we will:

- Proactively manage our impacts on lineside neighbours and work with local communities
- Endeavour to make the railway accessible to all
- Promote healthy working lives for all our staff
- Strive to be an employer of choice
- Actively pursue and promote a diverse and inclusive workplace



Economic Development: The railway infrastructure is the core of our business, but we understand that many other aspects of our business such as our plant, technology and communication systems also need to be valued. We know we need to measure, monitor and risk assess the financial aspects of our business activities to ensure success. Over the next five years we will:

- Develop and promote the railway as a sustainable mode of transport
- Place more emphasis on whole life costing and support low carbon design solutions for both renewals and enhancements
- Encourage and reward innovation to promote efficiency
- Procure our materials in a sustainable, accountable manner

We will develop further the mechanisms for identifying and reviewing significant business risks and opportunities to ensure legal compliance, improve performance and deliver efficiencies. Scotland Route is committed to proactively managing its impact on the environment and maximising opportunities to create social value, while ensuring good value for tax payer's money. This sustainable development strategy is the cornerstone of that commitment and will guarantee a Scottish railway fit for the future.

6.6. Technology, R&D and Innovation strategy

We strongly support research and development (R&D) and see it as an important way for us to deliver innovation, efficiency, improved asset management and performance improvements over time. Throughout 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 developing remote condition monitoring technology for our Civils assets. Aligned with this, we will continue to support innovative research at Scottish Universities, such as Strathclyde University's research into "Early warning decision support system for the management of underwater scour risk for road and railway bridges".

6.7. Asset management capability

The IMS will make it easier to understand what is expected, and to 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 as well as enabling us to achieve asset management capabilities that demonstrate alignment to ISO55001 through independent certification or self-assessment.

Assurance

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.

With increasing levels of devolution, the Scotland Route will review and enhance the governance arrangements, so that the Route Leadership are assured that RM3 assurance activities are properly considered and acted upon. Scotland's strategy is based on a continuous improvement in the health and safety of passengers, the workforce and members of the public working towards delivery of zero industry caused fatalities and major injuries to passengers, the public and our workforce.

Scotland will achieve this through progressing and attaining excellence in:

- Culture,
- Health, safety and asset management, and
- Risk control,
- Maximise employee contribution.

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 CP6 efficiency plans, with a core principle of sharing of ideas and best practice 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.

6.8. 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.

The WRACCA plan for CP6 is currently being updated to reflect future business needs whilst considering the effects of updated UK Climate Projections UKCP18, dated December 2018. In summary, this plan will risk assess these future projections, low to high, in terms of their possible adverse impacts on train running – this will see increased emphasis on schemes designed to mitigate the risks from projected increased rainfall (flooding and landslide) and wind (obstructions on the line). These high-risk areas will form a key driver in solutions aimed to mitigate these risks. Other climate projections will be considered as part of our Route plan, however, the confidence levels on projections is variable and therefore not all will be deemed a key driver for work banks. The plan will also include a review of all CP5 actions and will have a long-term approach, looking at weather resilience schemes which could be funded in future control periods.

7. Financial performance

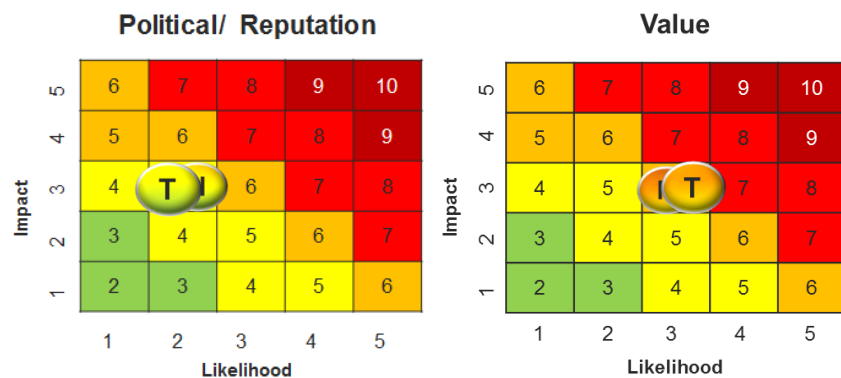
7.1. Financial performance objectives

Financial Performance - (20%)	Targets	Weighting	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Financial Performance Measure (FPM) – Gross Profit & Loss	Worse than Target	5.0%	-						
	Target		0	0	0	0	0	0	
	Better than Target		-						
Financial Performance Measure (FPM) – Gross Renewals	Worse than Target	5.0%	-						
	Target		0	0	0	0	0	0	
	Better than Target		-						
Financial Performance Measure (FPM) – Gross Enhancements	Worse than Target	5.0%	-						
	Target		0	0	0	0	0	0	
	Better than Target		-						
Cash Compliance	Worse than Target	5.0%							
	Target								
	Better than Target		0	0	0	0	0	0	

Key stakeholder priorities	Response
Deliver the CP6 commitments within the allocated funding from Transport Scotland and forecasted revenue streams. (Transport Scotland)	The Finance organisation within Network Rail has been strengthened to align with this objective and will work with colleagues in Transport Scotland, Infrastructure Projects and Network Rail Corporate to enhance the existing reporting framework and governance processes to highlight potential opportunities and risks.
Establish a forecasting process with Transport Scotland to ensure year-on-year spend does not exceed grant funding. (Transport Scotland)	We will establish periodic reviews by the end of CP5 with Transport Scotland to align the Route's financials to the Scottish Government reporting and planning cycles.
Develop a reporting framework for major renewals and how they align with the Enhancements pipeline. (Transport Scotland)	We have started a major renewals project development group to share progress on the Carstairs project with Transport Scotland and ORR. This consultation is in line with the broader enhancements governance but recognises the difference in approval roles for renewals. Our intention is that this model is adopted for any future major renewal projects (Defined by Transport Scotland and ORR as renewals projects with an AFC of > £25m).

7.2. Financial performance activity prioritisation

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	(C) Network Rail funding moving from AME to DEL limits flexibility in rephrasing funding between years	Increased focus to be applied to periodic and annual forecasting through all functions with a greater focus on contingency planning to mitigate any project slippage.	Route Finance Director	All	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 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	Ongoing 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	Ongoing 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	Ongoing to end of CP6
6	(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.	Chief Operating Officer	Infrastructure Projects	Ongoing

**Summary of risk outcome**

Financial risks are currently being managed within risk appetite but there are several emerging challenges that require regular review. There are several levers that can be used to mitigate risks and the completion of a robust CP6 plan will assist with decision making in this regard.

7.3. Financial Sustainability strategy

We will investigate opportunities for Third Party Funding through the Open for Business programme which may deliver additional enhancements to Scotland's Railway or its neighbours and stakeholders. Utilisation of the assets of Scotland's Railway as well as our expertise will assist in the Scottish Government's Sustainable Development Strategy and we will investigate the possibility of further utilising land, buildings and other assets to provide financial and other socio-economic benefits to the Railway and its neighbours.

8. Activities & expenditure

8.1. Renewals Cost and volume summary

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

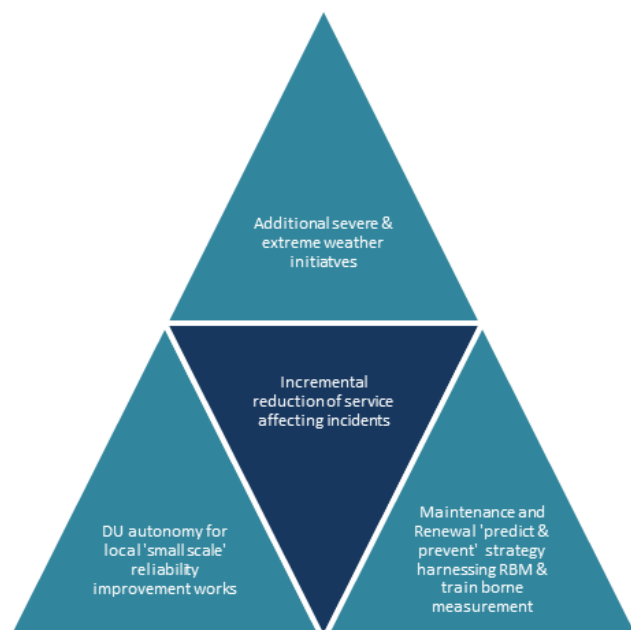


Figure 8.0 – Levers for improving asset reliability

In terms of the core operation, maintenance and renewal (OMR) 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. To achieve this vision our railway will need to be increasingly reliable, with fewer service affecting incidents. Figure 8.0 opposite illustrates how this has been built into our OMR plan.

1. We aim to invest more to provide increased physical resilience to extreme weather events, to reduce the impact on passengers and freight users 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 must 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.
3. A continued focus on Lean techniques within our maintenance delivery units, with waste elimination allowing effort to be reinvested in the targeted delivery of further reliability

The pre-efficient cost forecasts in this plan for OMR 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.

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 as well as targeting weather resilience. Plans also make provision to reduce specific risks with earthworks susceptible to heavy rainfall. Rollout of further remote condition monitoring systems including fibre optic rock fall detection, slope stability monitoring and flood telemetry.

Phasing of cost and volumes has been reviewed since the February 2018 RSP submission to address deliverability considerations, and to more accurately reflect our delivery plan.

The three key renewals within our CP6 plan are:

Carstairs Junction.

- The single largest renewal in our CP6 plan. Has been remitted to IP Signalling and current planned commissioning date is Year 5, CP6
- The renewal of the associated OLE and signalling equipment has been aligned with the track works. The works are extensive, 35-point end interventions (12 remodelled, 9 like for like, and 14 abandonments), and 10km of plain line track renewal, renewal / refurbishment of all outside signalling equipment.
- By correcting non-compliances, improved line speeds on the main lines and routes between Glasgow and Edinburgh via Carstairs will be achieved.

Edinburgh Control System.

- Renewal of the obsolete IECC Classic control system, which by the end of CP6 will no longer be supported by the original equipment manufacturer
- A requirements document has been issued to IP Signalling remitting the full renewal of the system.
- Current target is for commissioning in Y2 CP6
- This is a key enabler to the GLAB and SEtEC enhancement projects

Perth re-signalling and rationalisation

- Renewal of 1962 signalling interlocking and outside equipment
- Modifications to the track layout
- This project will integrate with the proposed Seven Cities enhancement pipeline project

RENEWALS COSTS (post headwinds and efficiencies in cash prices)

	Unit of Measure	Funded by	CP5 (£m)	CP6 (£m)						CP7 (£m)	
			18/19	19/20	20/21	21/22	22/23	23/24	CP6	24/25	25/26
Track	£m	Renewals	115	114	184	188	152	113	751	182	188
Conventional Signalling	£m	Renewals	72	79	122	78	82	42	404	45	47
Structures	£m	Renewals	56	61	76	82	82	75	376	80	82
Earthworks	£m	Renewals	32	25	30	33	30	31	149	37	38
Drainage	£m	Renewals	6	22	20	23	26	14	104	12	12
Buildings	£m	Renewals	26	8	13	16	14	14	66	24	25
Electrification & Fixed Plant	£m	Renewals	20	14	14	10	8	5	51	13	13
Other	£m	Renewals	-	1	1	1	2	2	7	2	2
Total Renewals	£m	Renewals	326	325	461	430	395	297	1,909	395	407

Table 8.1 – Renewal costs

KEY VOLUMES

Unit of Measure		Funded by	CP5	CP6						CP7	
			18/19	19/20	20/21	21/22	22/23	23/24	CP6	24/25	25/26
Plain Line	Linear track km	Renewals	185	155	188	180	192	194	909	300	292
S&C	No. of S&C units	Renewals	80	77	97	98	79	96	448	127	140
Conventional Signalling	SEU	Renewals	526	20	178	259	264	61	782	15	15
Embank/Soil Cut/Rock Cut	No. of	Renewals	719	670	731	807	713	709	3,630	843	843
Underbridges	Number of assets intervened on	Renewals	-	42	52	52	56	54	256	53	53
Underbridges	m2 plan deck area worked on	Renewals	22,179	14,345	17,396	17,669	18,335	16,740	84,485	18,000	18,000
Wire runs	No. of	Renewals	8	0	0	5	10	10	25	41	41
Conductor Rail renewal	Km	Renewals	0	0	0	0	0	0	0	0	0

Table 8.2 – Key volumes

8.2. 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 OMR plan which will be supported by three key aspects:

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 must 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, the expansion of the electrification system will have resulted in a 25% increase in single track kilometres of OLE, from 1,671 to 2,100, accounting for 50% of the overall Scottish rail network. 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 yet been included for any further enhancements that may be delivered via the enhancement pipeline.

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. Our plans now reflect increased volumes and resource required to progress towards this compliance.

To assist the delivery of Off Track in the CP6 plan we are trialling the introduction of a dedicated Off-Track Maintenance Engineer with the long-term view, if successful, of introducing the post to each of the 4 maintenance 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 few 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 three key pillars 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, the 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 by the end of CP5. 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). 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.

Signalling Power Supplies

To achieve compliance with the Electricity at Work Regulations 1989 regarding 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 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 be 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 it is 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 (post headwinds and efficiencies in cash prices)

	CP5 (£m)	CP6 (£m)						CP7 (£m)	
	18/19	19/20	20/21	21/22	22/23	23/24	CP6	24/25	25/26
Track		57	57	59	61	63	297	65	67
Off track		14	14	13	15	16	72	16	17
S&T		20	20	21	21	22	104	23	24
E&P		10	10	10	10	11	51	11	11
DU HQ		7	6	3	2	0	18	0	0
DU/WD Mainte excl. B&C	75	107	107	106	109	111	542	115	118
Non DU Maintenance	65	40	38	36	37	37	187	38	39
Civils: Buildings Maintenance							0		
Civils: Structures Maintenance							0		
Civils: Earthworks Maintenance	16	17	16	17	18	18	86	19	19
Total Maintenance Costs	157	164	161	160	164	166	815	172	177
Operations	58	60	49	49	51	52	260	53	55
Support	6	15	14	14	15	15	72	16	16
Operations & Support Costs	64	74	63	64	65	67	332	69	71
Risk	0	0	36	67	94	108	306		
Total Controllable Costs	221	238	260	290	323	341	1,453	352	362
Non-Controllable Costs	0	0	0	0	0	0	0	0	0
Headcount									
Permanent	2,712	2,815	2,791	2,800	2,816	2,826		2,826	2,826
Agency	21	8	8	8	8	8		8	8

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 committed CP6 enhancement schemes no allowance has been made in the Operations and Maintenance costs.

Table 8.3 – OPEX costs

8.3. Enhancements costs

In contrast to previous Control Periods, in CP6, enhancements can be introduced at any time and will be governed by Transport Scotland's Rail Enhancement Capital Investment Strategy.

Table 8.4 shows the committed CP5 enhancement schemes that will continue into the first year of CP6. The it also shows the Category 2 enhancement options for funders 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. The full impact on the OMR plan, including costs and outputs, of new CP6 enhancements will be considered as part of their development through the pipe line process.

Scheme	Programme Name	Category	CP5 £m cash Prices						CP6 £m	FY20	FY21	FY22	FY23	FY24	CP6
			FY15	FY16	FY17	FY18	FY19	CP5							
-	EGIP	Ongoing	96	188	204	109	64	661	48	6	-	-	-	-	54
-	Borders	Complete	180	22	-1	0	0	201	0	-	-	-	-	-	0
-	Rolling programme of electrification	Ongoing	32	28	69	136	139	404	2	-	-	-	-	-	2
-	Aberdeen to Inverness - Phase 1	Ongoing	6	13	29	82	124	254	72	-	-	-	-	-	72
-	Highland Mainline	Ongoing	1	3	2	5	39	50	5	-	-	-	-	-	5
-	Dunbar down platform	1	0	1	0	0	1	2	11	-	-	-	-	-	11
1	Growing the Lothian and Borders (GLAB)	2	-	-	-	-	-	-	Subject to Transport Scotland Rail Enhancement and Capital Investment Strategy						
2	Seven Cities Connectivity: Glasgow to Perth Corridor Enhancement	2	-	-	-	-	-	-							
3	Seven Cities Connectivity: Edinburgh Waverley Western Approaches Enhancement	2	-	-	-	-	-	-							
4	Glasgow to East Kilbride / Barrhead Corridor Enhancement	2	-	-	-	-	-	-							
5	Scotland East to England Connectivity (SEEC)	2	-	-	-	-	-	-							
6	Enhancement of the Far North Line	2	-	-	-	-	-	-							
7	Central Scotland Gauging & Route Clearance	2	-	-	-	-	-	-							

Table 8.4 – Committed CP5 enhancement schemes

Growing the Lothian and Borders (GLAB)

- Provide more resilient 25kV power supply for electrified routes in the Edinburgh area and Central Belt of Scotland
- Improve train service reliability into and around Edinburgh Waverley
- Accommodate forecast growth in local and cross-border passenger and freight demand for commuting into Edinburgh up to 2043*

Seven Cities Connectivity: Glasgow to Perth Corridor Enhancement

- Reduce overall rail journey times from Aberdeen and Inverness to Glasgow
- Increase freight capacity between Central Scotland freight terminals and Perth

Seven Cities Connectivity: Edinburgh Waverley Western Approaches Enhancement

- Increase network capacity to improve train service reliability and accommodate additional services through the Haymarket to Edinburgh Waverley corridor

Supporting the Greater Glasgow Economy: Glasgow to East Kilbride/Barrhead Corridor Enhancement

- To determine how capacity can be provided to meet demand at the end of CP6 and in 2043 on services between East Kilbride and Glasgow Central in the morning peak (07:00-09:59).

Scotland East to England Connectivity (SEtEC)

- Enhanced connectivity in the East Lothian region to Edinburgh by the end of CP6
- Enhanced connectivity by the end of CP6 in the Scottish Borders region to Edinburgh and Newcastle
- Enhanced local and cross-border (passenger) service provision on the ECML in the Medium-Long term (5-20 years (CP7-CP9))
- Accommodate existing and increased freight demand on the ECML in the Short-Medium-Long term (1-20 years (CP6-CP9))

Enhancement of the Far North Line

- The objective is to improve connectivity on the Far North Line between Inverness and Thurso/Wick by increasing the number of services on the line, whilst improving service reliability and journey time.

Central Scotland Gauging & Route Clearance

- Supports creation of Strategic Freight Network of high capability routes from cross-border freight services to enable a resilient timetable, with diversionary routes during planned & unplanned disruption.

8.4. Whole system signalling strategy

We will develop a long term, whole system signalling strategy for Scotland incorporating its existing signalling renewals, the elements of the GB Digital Rail Strategy that are applicable to Scotland and Transport Scotland's rolling stock plan.

For like-for-like signalling renewals (e.g. no capacity enhancement), passive provision for DR Ready specifications will be made as appropriate. For these schemes, in line with the latest GB Digital Rail strategy, a DR ready passive provision specification is assumed to not add any material cost. This is based on the following assumptions:

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

8.5. Telecoms strategy

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 ageing telecoms equipment and power supplies to support Route assets
- Costs allocated across all SISS assets in the 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 Driver Only Operation (DOO) assets
- Significant budget evenly allocated on PA/PAVA, CIS and CCTV

8.6. Property strategy

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 Route, currently with 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 Dualling 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 Specification, specifically reference to property disposal and making best use of redundant or underused assets.

8.6.1. 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 / SO / 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.

8.6.2. Disposals and Income Generation

Sites being considered for disposal will be subject to early industry consultation so that operational uses can be protected, and where possible, enhanced. The Route will work to dispose of land where it presents a liability 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 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.

8.6.3. 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 its corporate estate more efficiently and we plan to realise OPEX savings as a result. The capital funding for work place management has now been devolved to the routes.

9. Delivery strategy

9.1. 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 start 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 enough plant and staff for delivery allocated to, and normally based in, Scotland.

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 (Annex 4).

9.2. Project Delivery (IP) strategy

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:

- One Infrastructure Projects
- Alignments with Route / 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 is graphically represented in Figure 9.0 over page:

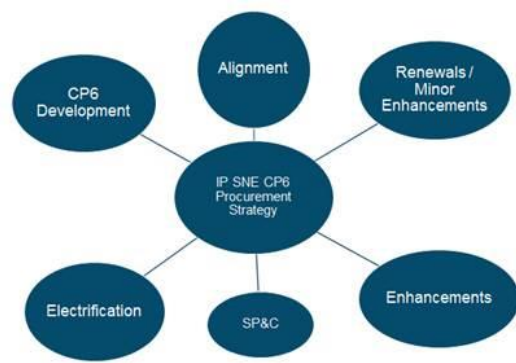


Figure 9.0 – Project Delivery (IP) Strategy

Acting as a single '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 e.g. de-vegetation, 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.

9.2.1. Access

Enhancements delivery for CP6 brings some planning challenges as Transport Scotland intends to proceed with a suite 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.

9.2.2. Supply chain capability

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. RS 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. RS are supporting Scotland in developing an increased focus on provision of locally based plant & resources.

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.

9.2.3. Works Delivery capability

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. 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.

9.3. Wheeled Plant strategy

9.3.1. On track plant strategy

Grinding provides the most economic method for maintaining and remediating rail at the earlier stages of rolling contact fatigue (RCF) propagation. The introduction of rail milling capability will treat heavy and severe RCF which unless treated would require a significant programme of re-railing.

High Output delivery has been focussed to those routes in Scotland where access is at a premium and where significant additional access would be required to deliver volumes with conventional techniques. This sees increased TRS and reduced BCS demand from the national fleet

Seasonal treatment from the Supply Chain Organisation supplied fleet of specialist rail vehicles forms a key part of the Route's commitment to making our infrastructure resilient to the impact of the weather conditions. It is anticipated that our demand in CP6 will be broadly like today with a focus on reliability of supply.

We are increasing our stone-blowing demand due to the proven improved track geometry outputs and the associated durability of the improvement. This is mirrored nationally and therefore capability to meet the additional national S&C demand will not be available in the first two years of the control period whilst new multipurpose machines are sourced by RS to replace life expired plain line machines. The Route will prioritise stone-blowing resources and where appropriate undertake alternative treatment in the meantime.

The recent tender for the new tamper and ballast regulating contracts saw the Route and RS co-ordinating to align fleet capability with requirements.

9.3.2. Wheeled Plant strategy

The Route's Head of Infrastructure Support Services (HISS) Wheeled Plant team, working collaboratively with the Maintenance and Works Delivery teams, and building on the CP5 initial set up of the plant team at Shettleston Rail Plant depot, will continue to review and improve the support the delivery of operational maintenance and works delivery in the Scotland Route. With support and emphasis on key points:

- Safety Improvements in available plant
- Accident and incident investigation
- Owned OTP fleet management
- Centralised 3rd Party Hired in OTP management
- Maximise cross functional sharing of plant and equipment
- POS management and compliance
- Plant Innovation and development
- Development of outlying plant facilities
- Maintenance and Works delivery staff upskilling, Shettleston is a registered NSAR OTP training facility
- Contract management and reviews with C&P
- New plant selection and procurement, business cases and investment papers
- Plant refurbishment management
- Reducing manual handling and improving plant ergonomics
- Support IP teams and Principal Contractors
- 24/7 on-call Route support

Continued focus will be on engaging with maintenance DUs and Works delivery teams at early planning stages to ensure that appropriate delivery strategies can be put in place to enable works to be delivered safely and efficiently. Continual improvement will allow CP6 efficiencies to be met will expanding the plant team and working with the Route senior management teams.

9.4. Maintenance strategy

9.4.1. Maintenance access

CP5 engineering 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 maintenance and renewal 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.

9.4.2. Maintenance capability

The emerging theme of our CP6 maintenance strategy is to develop a shift towards a 'predict & prevent' ethos (shown in Figure 9.1 overpage) 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.

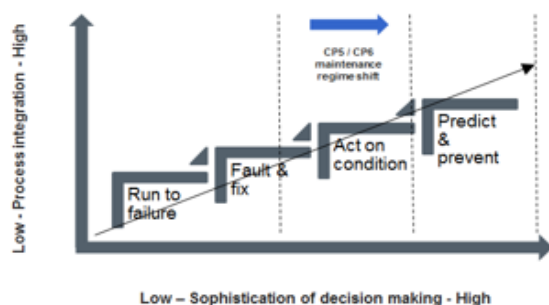


Figure 9.1 – Shift towards predict & prevent approach

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 a key part of our plan.

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.

9.5. Operations strategy

Our CP6 strategy is underpinned by several CP5 signal box migrations from 2016 onwards outlined within Table 9.0.

CP5 Key Milestones	Date
Elgin SB, Forres SB & Nairn SB transfer to Inverness SC (Highland Workstation)	Completed
SANOS South (Greenhill SB, Carmuir East SB, Larbert North SB & Grangemouth SB transfer to Edinburgh IECC	Completed
Motherwell SC panels 2 & 3 transfer to Whifflet Workstation WSSC	Completed
SARS fully operational Shields, Cathcart, Pomladie, Paisley & Ayr Workstations WSSC	Completed
Motherwell SC Panels 1, 2, 3 4 & 5 transfer to Motherwell Workstation WSSC	Completed
Newtonhill SB (Aberdeen SC)	March 2019

Table 9.0 – CP5 Signal box migration / modification / closure plan

Table 9.1 overleaf 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.

CP6 Key Milestones	Date
Aviemore SB transfer control (Highland Workstation, Inverness SC)	April 2019
Pitlochry SB to transfer control (Stanley SB)	April 2019
SARS fully operational Glasgow Link Workstations WSSC	August 2019
Dyce SB transfer control (Highland Workstation, Inverness SC)	August 2019
Inverurie SB transfer control (Highland Workstation, Inverness SC)	August 2019
Motherwell SC Panel 6 transfer to Carstairs Workstation WSSC	December 2019
WSSC : MCS Workstations Enhanced Screen Technology Go Live	April 2020
Inverness NX Panel transfer to control (Highland Workstation, Inverness SC)	December 2020
Edinburgh IECC Renewal of Signalling Control System (Traditional IECC Workstations)	March 2021
Perth Corridor Enhancements (Dunblane SB, Greenloaning SB, Auchterarder SB, Blackford SB, Barnhill SB, Hilton SB & Perth SB transfer to New Perth Workstation Edinburgh IECC	December 2022
Aberdeen SB transfer control to Inverness SC (Highland Workstation)	March 2023
Annan SB transfer control to Dumfries SB	December 2023
Barrhead SB transfer control to Cathcart Workstation WSSC	December 2023

NOTE: An allowance has been made within the Route OPEX costs for the impact of electrification schemes on the staffing levels required at Electrical Control Room at Cathcart.

Table 9.1 – CP6 Signal box migration / modification / closure plan

10. Headwinds and efficiency

CAPEX fishbone (£ cash)

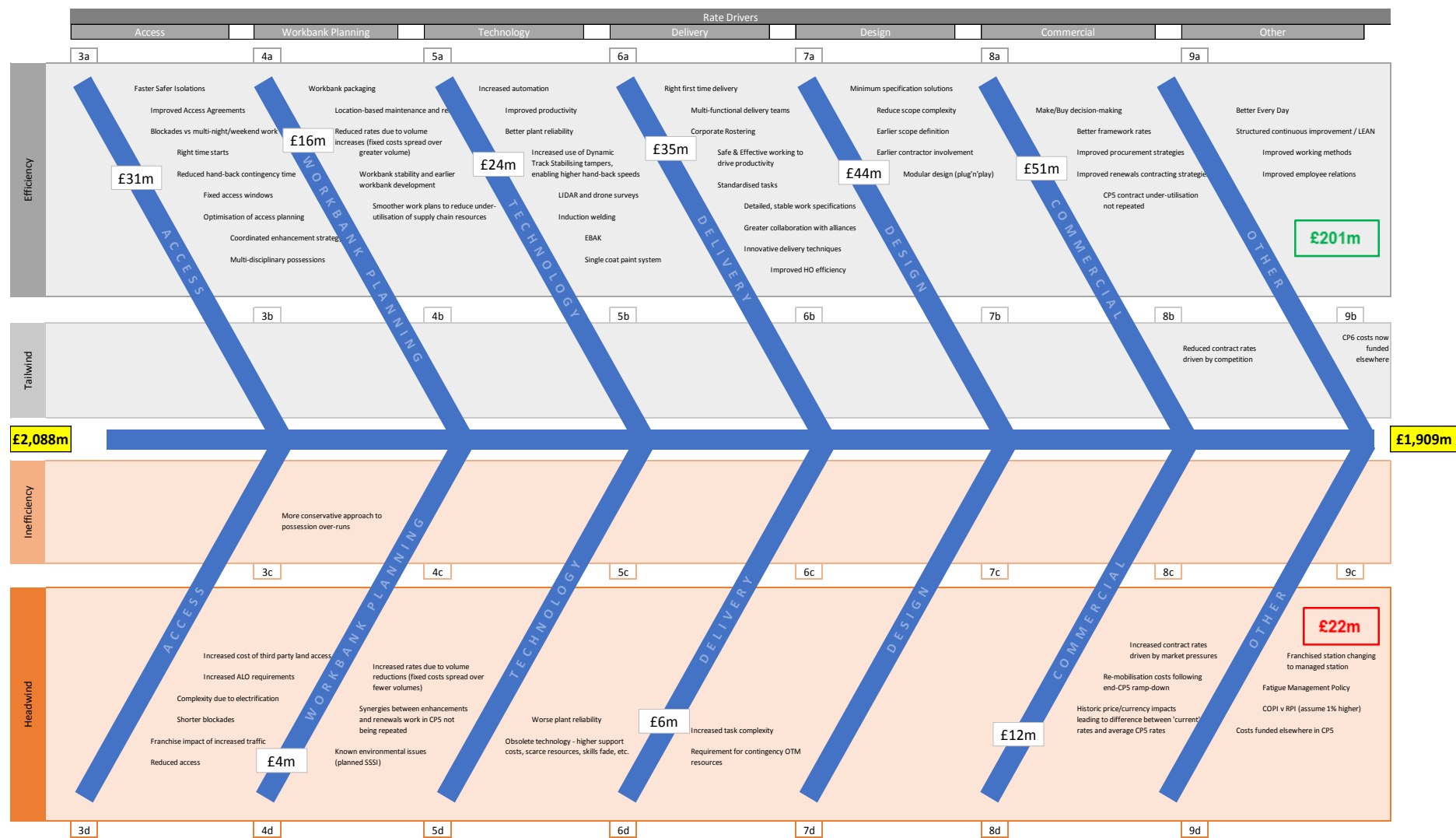


Table 10.0 – CAPEX fishbone diagram

OPEX fishbone (£m cash)

Route Businesses Scotland CP6 Fishbone - All figures in cash prices and £m's unless stated otherwise.

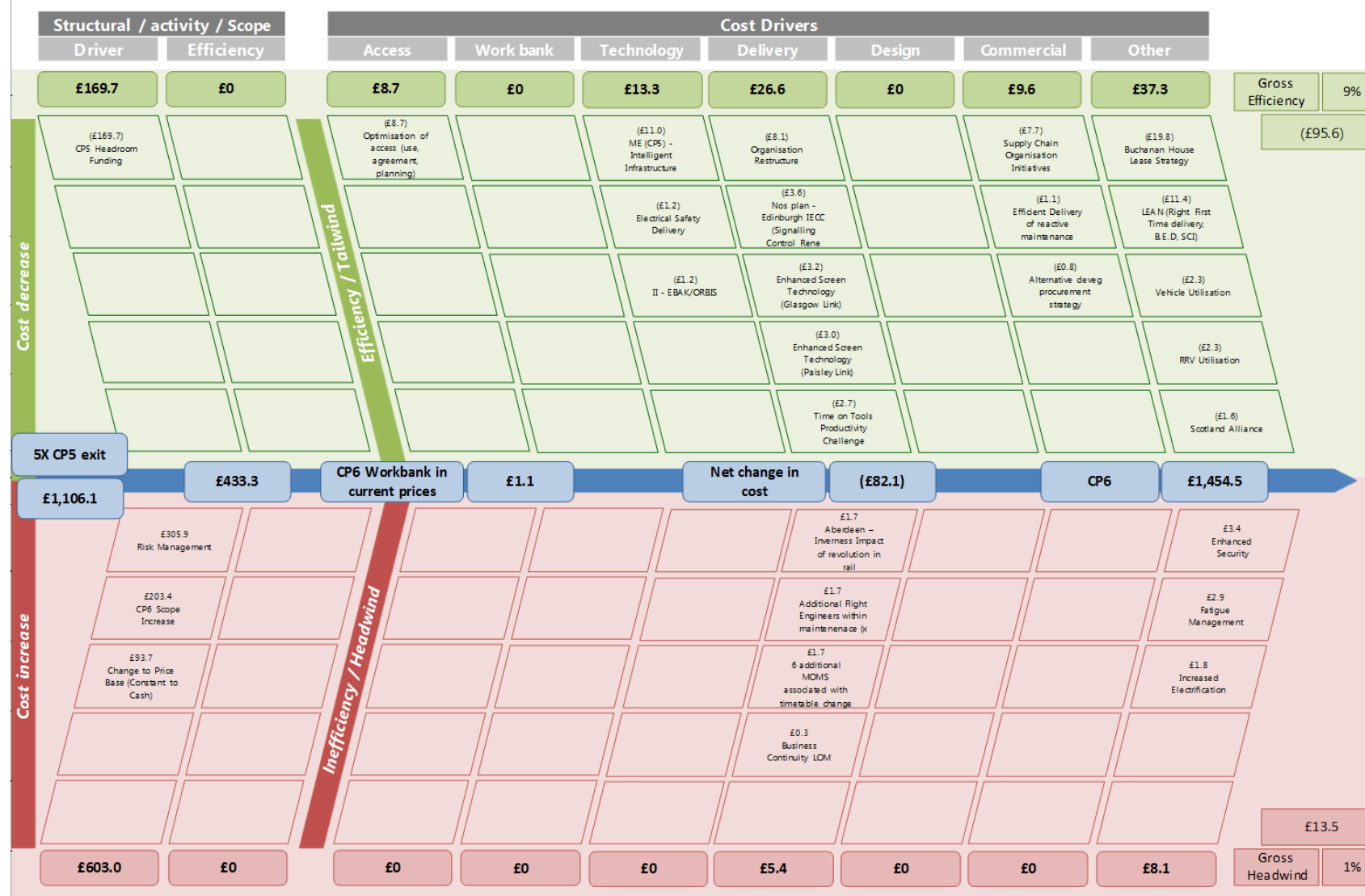


Table 10.1 – OPEX fishbone diagram

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 as outlined in Tables 10.0 and 10.1 above. 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 we have worked 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.

11. Risk and uncertainty in the plan

	Unit of Measure	CP5 (£m)	CP6 (£m cash)						CP7 (£m)	
		18/19	19/20	20/21	21/22	22/23	23/24	CP6	24/25	25/26
Risk (SBP Route held)	£m	-	0	36	67	94	108	306	-	-

Table 11.0 – Financial risk summary

This section sets out our estimate of the degree of financial uncertainty within our 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 reductions (efficiencies / tailwinds), where there is a reasonable expectation they will occur, have been identified separately from the core CP6 plan.

The combination of our core CP6 plan, headwinds / tailwinds and efficiencies / inefficiencies is our ‘submission’ and represents the ‘most likely outcome’ for CP6. However, it excludes any funding for financial risk that sits in our plan within Table 11.0 above.

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 (i.e. our plan is set at around P50). This means that approximately half of the time, we will be able to deliver our plan for the forecast cost. However, financial 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. Our analysis also shows that there is significantly more financial uncertainty in later years of the control period.

Financial uncertainty

Table 11.1 below, presents our estimate of the overall range of financial uncertainty across our income and expenditure for CP6. It also identifies the main drivers of the uncertainty ranges. The information in this table is based on Route analysis of the financial uncertainty in support and operations, maintenance and renewals costs, and income. The spot values in Table 11.1 include headwinds / tailwinds and efficiencies / inefficiencies. The financial uncertainty ranges represent our assessment of the outturn income and expenditure that could occur in 95% of scenarios in CP6.

Area	Potential range (low – spot – high)	Summary of key drivers of the uncertainty range	% of range	
		Driver of range	Lower %	Upper %
Renewals	Financial uncertainty ranges - renewals	Cost of supplier and contractor costs - Impact from delays in agreeing and mobilising new contracts and potential cost increases. Certain sectors of the supply chain may become overheated resulting in delays or cost increases	-50%	59%
		Understanding of maintenance and/or renewals work banks - Changes to work types and potential increases in unit rates	-19%	29%
Maintenance	Financial uncertainty ranges - maintenance	Understanding of maintenance and/or renewals work banks - Infancy of ABP model & long-range potential changes +/- 5% HOM Budget	-45%	22%
		Deliverability of forecast efficiencies - Assumed at P50 Risk, 20% opportunity to advance future year, or identify additional opportunities (including better efficiency delivery through II) (excluding Y1 CP6)	-24%	25%
		Availability of access - 5% of HOM budget, estimated for risk of greater impact of electrification, higher traffic volumes, longer operating hours, etc	0%	22%
		Weather and other serious incidents - Consideration in regard to storms, hot weather, or serious incidents. Assumed at 1 x incident to max excess value - though likely to emerge a multiple smaller occurrence	0%	9%
		Other 1 - Resonate OPEX Maintenance cost if national renewals taper not met	0%	3%
		Other 2 - AMEY CEFA TUPE Potential Cost / Potential of higher impact of fatigue.	0%	2%

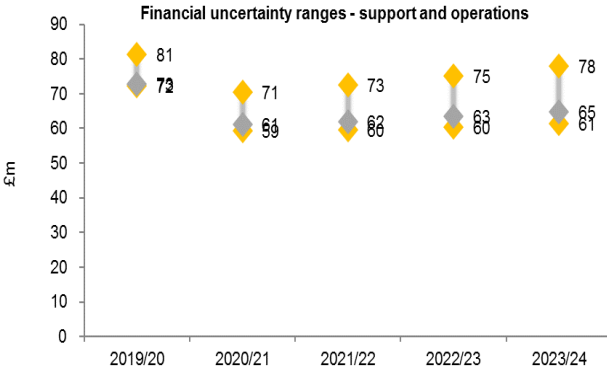
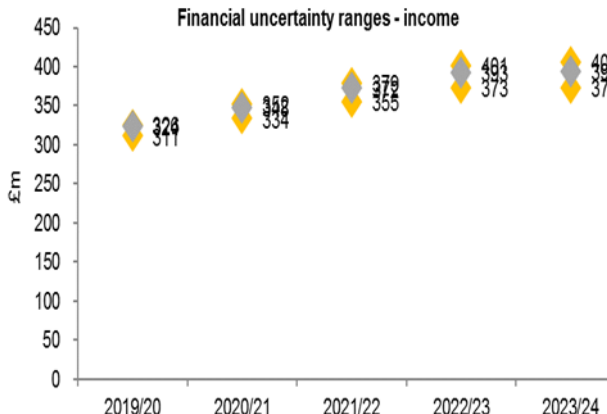
Support and operations	 Financial uncertainty ranges - support and operations <table><thead><tr><th>Year</th><th>2019/20</th><th>2020/21</th><th>2021/22</th><th>2022/23</th><th>2023/24</th></tr></thead><tbody><tr><td>Upper Bound (£m)</td><td>81</td><td>71</td><td>73</td><td>75</td><td>78</td></tr><tr><td>Lower Bound (£m)</td><td>72</td><td>64</td><td>66</td><td>68</td><td>65</td></tr></tbody></table>	Year	2019/20	2020/21	2021/22	2022/23	2023/24	Upper Bound (£m)	81	71	73	75	78	Lower Bound (£m)	72	64	66	68	65	Changes in policy and practises e.g. asset policies, fatigue management or new standards - Impact of operations business continuity issues, including IR & compulsory paid rest breaks. Assumed 20% impact to HOOD Organisation	0%	68%
		Year	2019/20	2020/21	2021/22	2022/23	2023/24															
		Upper Bound (£m)	81	71	73	75	78															
		Lower Bound (£m)	72	64	66	68	65															
		Deliverability of forecast efficiencies - Efficiencies reliant on headcount reductions post-delivery of signalling schemes - P50 risk applied to Operations efficiencies (particular concern re current policy of no compulsory redundancies). 20% opportunity considered for future year advancement (excluding Y1 CP6) and / or completion of additional closures	-36%	16%																		
Income (TBC at RF11)	 Financial uncertainty ranges - income <table><thead><tr><th>Year</th><th>2019/20</th><th>2020/21</th><th>2021/22</th><th>2022/23</th><th>2023/24</th></tr></thead><tbody><tr><td>Upper Bound (£m)</td><td>328</td><td>358</td><td>379</td><td>401</td><td>406</td></tr><tr><td>Lower Bound (£m)</td><td>311</td><td>334</td><td>355</td><td>373</td><td>373</td></tr></tbody></table>	Year	2019/20	2020/21	2021/22	2022/23	2023/24	Upper Bound (£m)	328	358	379	401	406	Lower Bound (£m)	311	334	355	373	373	Access charging income	-6%	0%
		Year	2019/20	2020/21	2021/22	2022/23	2023/24															
		Upper Bound (£m)	328	358	379	401	406															
		Lower Bound (£m)	311	334	355	373	373															
		Schedule 4	0%	0%																		
Schedule 8	-59%	0%																				

Table 11.1 – Financial uncertainty summary

12. CP6 income / expenditure

This section sets out our latest forecast of expenditure and income for CP6, and also how our forecasts compare to the assumptions ORR made in calculating our CP6 route funding settlement. Consistent with ORR's PR18 final determination, the tables in this section include route-incurred, and allocated, expenditure and income. The tables below represent the Scotland nation, which includes an allocation of FNPO route costs.

CP6 expenditure forecast

In Table 12.1, below, we provide our latest CP6 forecast of expenditure. The forecast, below, will act as the baseline against which ORR measures financial performance in CP6.

Table 12.1: CP6 expenditure forecast

<i>£m in cash prices</i>	19/20	20/21	21/22	22/23	23/24	Total	Other*	CP6
Support	15	14	14	15	15	72	268	346
Operations	60	49	49	51	52	260	7	267
Maintenance	164	161	160	164	166	815	41	855
Renewals	326	461	430	395	297	1,909	339	2248
Schedule 4 & 8	25	18	14	12	27	95	16	111
EC4T, industry costs and rates	0	0	0	0	0	0	386	386
System Operator	0	0	0	0	0	0	49	49
GPF: route	0	36	67	94	108	306	0	306
GPF: contingent asset management	0	0	0	0	0	0	0	0
GPF: centrally-held	0	0	0	0	0	0	1	1
Total costs	589	739	735	729	666	3,457	1,106	4,564

*Other represents the route allocation of national function costs.

In calculating the route funding settlement for CP6, ORR made assumptions about our costs. Table 12.2, below, compares our CP6 business plan expenditure forecasts with ORR's PR18 final determination assumptions.

Table 12.2: Business Plan vs. Final Determination expenditure assumptions

<i>£m in cash prices</i>	CP6 Business Plan			Final Determination			Variance		
	Route	Other*	CP6	Route	Other*	CP6	Route	Other*	CP6
Support	72	268	346	64	237	301	(8)	(31)	(39)
Operations	260	7	267	260	12	272	(1)	2	2
Maintenance	815	41	855	766	44	811	(48)	4	(44)
Renewals	1,909	339	2248	1,957	366	2,323	48	25	73
Schedule 4 & 8	95	16	111	81	5	86	(15)	((16)	(30)
EC4T, industry costs and rates	0	386	386	0	411	411	(0)	21	21
System Operator	0	49	49	0	47	47	0	(6)	(6)
GPF: route	306	0	306	329	0	329	23	(0)	23
GPF: contingent asset management	0	0	0	0	0	0	0	0	0
GPF: centrally-held	0	1	1	0	0	0	0	(1)	(1)
Total costs	3,457	1,106	4,564	3,457	1,122	4,578	0	(3)	(4)

Please note: ORR's PR18 final determination did not separately identify the costs allocated to routes from route-incurred costs. However, the table, above, identifies allocated costs based on underlying information from ORR's analysis.

CP6 income forecast

The expenditure in Table 12.1 needs to be paid for. In Table 12.3, below, we provide our latest CP6 income forecast. Our charging income forecast reflects our latest forecast of CP6 traffic levels and is consistent with final CP6 price lists.

Table 12.3: CP6 income forecast

<i>£m in cash prices</i>	19/20	20/21	21/22	22/23	23/24	Route	Other*	CP6
Variable charges (VUC, EAUC)	(26)	(27)	(28)	(29)	(30)	(141)	(26)	(167)
Stations LTC	(28)	(29)	(29)	(30)	(31)	(147)	0	(147)
EC4T	0	0	0	0	0	0	(226)	(226)
Schedule 4 ACS	(8)	(9)	(9)	(8)	(7)	(40)	(47)	(88)
FTAC	(263)	(278)	(294)	(311)	(328)	(1,473)	(24)	(1,497)
Network Grant (SOMR)	0	0	0	0	0	0	(2,245)	(2,245)
Income from FNPO	0	0	0	0	0	0		0
Other single till income	(20)	(20)	(21)	(21)	(22)	(104)	(115)	(219)
Income within scope of PR18	(345)	(363)	(381)	(399)	(417)	(1,906)	(2,683)	(4,589)

Please note: Government grants for corporation tax, financing costs, BT Police costs and enhancements were not agreed as part of ORR's final determination so we have not included them in our forecast of income for completeness.

*Other represents the route allocation of national function income.

In calculating the route funding settlement for CP6, ORR made assumptions about the amount of income we will receive from charges and other income. Table 12.4, below, compares our CP6 business plan income forecasts with ORR's PR18 final determination assumptions.

Table 12.4: Business Plan vs. Final Determination income assumptions

<i>£m in cash prices</i>	CP6 Business Plan			Final Determination			Variance		
	Route	Other*	CP6	Route	Other*	CP6	Route	Other*	CP6
Variable charges (VUC, EAUC)	(141)	(26)	(167)	(144)	(20)	(164)	(2)	6	3
Stations LTC	(147)	0	(147)	(148)	0	(148)	(0)	0	(0)
EC4T	0	(226)	(226)	0	(237)	(237)	0	(11)	(11)
Schedule 4 ACS	(40)	(47)	(88)	(81)	0	(81)	(40)	47	7
FTAC	(1,473)	(24)	(1,497)	(1,501)	0	(1,501)	(28)	24	(4)
Network Grant (SOMR)	0	(2,245)	(2,245)	0	(2,245)	(2,245)	0	(0)	(0)
Income from FNPO	0	0	0			0	0	0	0
Other single till income	(104)	(115)	(219)	(89)	(114)	(203)	15	1	16
Income within scope of PR18	(1,906)	(2,683)	(4,589)	(1,961)	(2,617)	(4,578)	(56)	66	10

CP6 affordability

Table 12.5, below, sets out our affordability position against Transport Scotland's Statement of Funds available (SoFA).

Table 12.5: Scotland affordability

<i>£m in cash prices</i>	SoFA	Delivery Plan	Variance
Network Grant / FTAC	(2,794)	(2,245)	(549)
Total Charges	(1,369)	(2,113)	744
Variable charges	(269)	(131)	(138)
FTAC	(1,100)	(1,497)	397
EC4T		(226)	226
Electrification Asset Usage Charge		(11)	11
Station Long Term Charge		(147)	147
Managed station Qx		(48)	48
Franchised station lease income		(10)	10
Depots		(39)	39
Facility Charge		(4)	4
Other Single Till Income	(98)	(132)	34
Other operating income	(110)	(88)	(22)
Capital grant for Enhancements	(956)	(950)	(6)
Total Income	(5,327)	(5,527)	200
Operating Costs (inc BTP)	1,747	1,985	(238)
Schedule 4 & 8	14	19	(5)
Group Portfolio Fund	250	307	(57)
Renewals	2,360	2,264	96
Enhancements CP5 Completion	126	126	0
Industry Investment	830	824	6
Total Expenditure	5,327	5,524	(197)
Surplus / (Deficit)	0	4	4

13. Sign-off

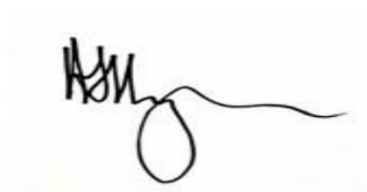
This document and accompanying templates are owned by the Alliance Managing Director (AMD).

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 AMD 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 the Routes Deliverability review and Appendix B Key Assumptions.

Signature

Date



Alex Hynes
Alliance Managing Director

7/2/2019



Ben Edwards
Director, Route Asset Management

04/02/2019.



Tom Greenan
Route Finance Director

4/2/19



Kris Kinnear
IP Regional Delivery Director

04/02/2019.

Appendix A - Stakeholder engagement

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, LNER, Virgin West Coast, TransPennine Express, Caledonian Sleeper, Cross-Country, Charter operators and Freight operators (Direct Rail Services (DRS), GB Railfreight, DB Cargo UK, Colas, Freightliner). 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 were and continue to be engaged

Stakeholders are engaged through the quarterly Route Investment Review Group (RIRG) to identify investment opportunities 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 followed by one in October 2018, to share the developing OMR 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 Figure A1 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 Abellio 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 Specification (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 I.

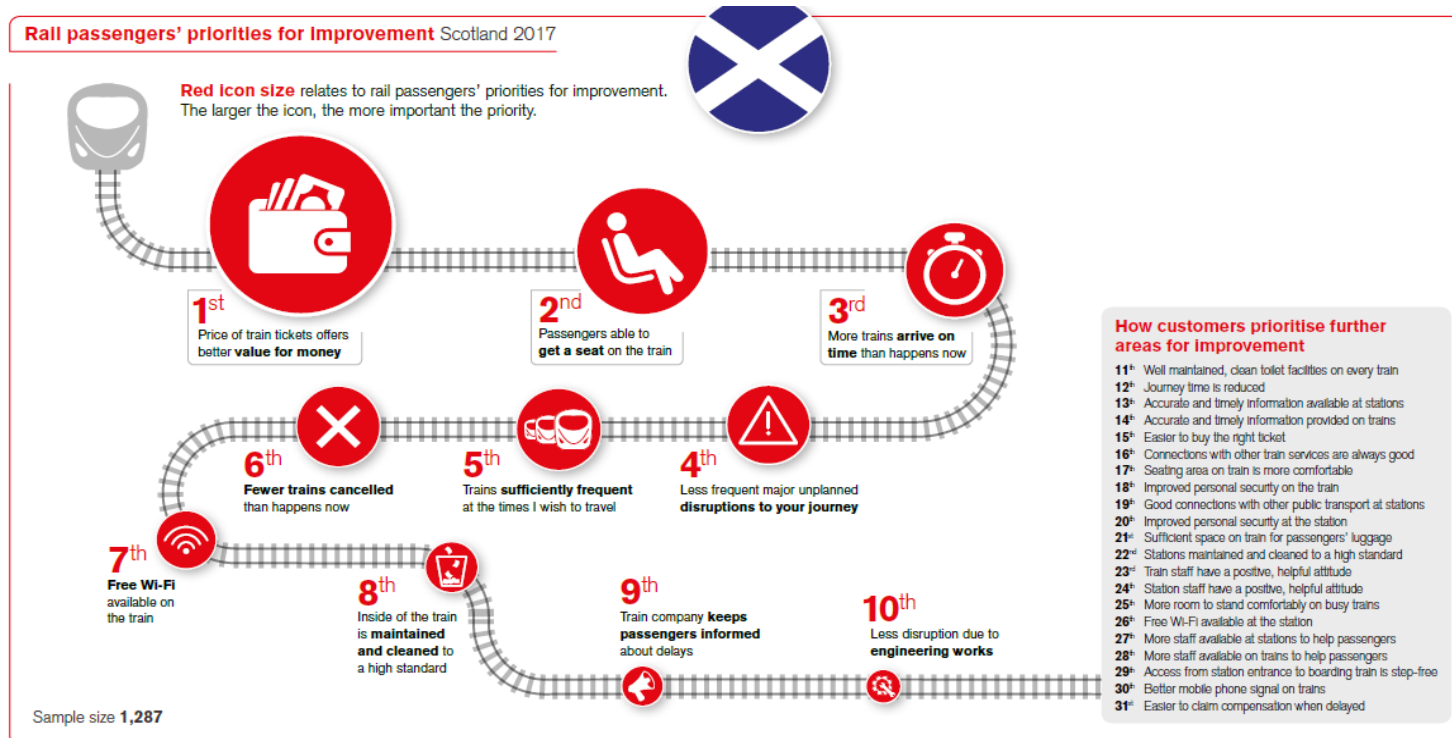


Figure A1 – Rail passengers' priorities for improvement Scotland 2017

Key stakeholder priorities correlated with long-term scorecard (LTS) illustrated in the Table A1 below.

Stakeholder	Key priorities for CP6	Included within LTS
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	Delivering the Right Time Arrival at Destination target of 80% for 2018/19 and to the end of the franchise. Minimising impact on existing services from introduction of the new fleet of sleeper coaches in 2019 and the impact of the HS2 works at Euston. Working with NR to minimise impact on sleeper services of Bank holiday possessions. Development of options for early boarding at managed stations and developing new markets and dedicated Lounges at key stations.	✓
Virgin Trains West Coast	Sustaining, but ideally improving train performance (London to Glasgow PPM MAA currently c.85%) Achieving journey time reductions to support modal shift from air, for example through more use of enhanced permissible speeds. Management of enhancements and renewals to minimise impact on cross-border traffic.	✓
London North Eastern Railway	Sustaining, but ideally improving train performance Journey time improvements into Edinburgh Waverley. Operating additional services once rolling stock available Taking advantage of new electrification north of Edinburgh.	✓
CrossCountry Trains	Performance resilience improvements between Edinburgh and Berwick. Drem to Edinburgh constraints: Portobello Junction: Abbeyhill Junction: would support schemes to reduce level of constraint risk at these locations Edinburgh to Glasgow: Journey times are important for passenger flows and would support schemes which enable improved journey times.	✓
TransPennine Express	Performance improvement via right time presentation border to Edinburgh and Glasgow Carstairs flexibility and the interaction with other operators Introduction of new trains to improve capacity, and platform capacity at terminal stations to support these. Spreading access for renewals and enhancement works through CP6 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 and swifter response to new business proposals.	✓
Direct Rail Services	- Protecting existing capacity for freight - Improving freight journey times Improved capacity (train length) and route availability (e.g. reducing restrictions for Class 66 locomotives). Addressing competition from the new A9 duel carriageway extension project 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).	

Table A1 – Key stakeholder priorities correlated with long-term scorecard

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 Wi-Fi 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 OMR 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 J.

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 OMR, 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.

Appendix B - Key assumptions

Ref no.	Topic (e.g. access, deliverability, climate etc.)	Assumption	Areas of spend impacted (e.g. all OPEX, track renewals, all spend etc.)
RSP/KA01	Deliverability	This plan is consistent with the delivery of category one and two enhancement pipeline projects but can be delivered independent of funding being agreed for these.	OMR
RSP/KA02	Risk	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, condition of adjacent private property at Ayr; third party costs/losses due to invasive species).	OMR
RSP/KA03	Deliverability	The plan assumes that revised commercial arrangements are in place to deliver the renewals work bank 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
RSP/KA04	Enhancements	Existing funded enhancements will be delivered in line with the Table 8.4 – Committed CP5 enhancement schemes (as at RF11 2019).	Enhancement funding
RSP/KA05	Finance	Additional OM costs associated with currently uncommitted enhancements (for example new CP6 electrification) are not included and it is assumed they will be varied in to plans when the enhancements are committed.	OM
RSP/KA06	Performance	Weather conditions in CP6 are not materially different to those experienced in CP5.	MR
RSP/KA07	Finance	Future legislative and policy changes, including changes to European regulations are cost neutral or reduce costs.	MR
RSP/KA08	Deliverability	Scotland Route cost and activity have been described on the basis of the current organisation as at February 2019, any changes to accountabilities arising from the 100-day plan will be reflected in a re-baselining of these numbers.	O

Ref no.	Topic (e.g. access, deliverability, climate etc.)	Assumption	Areas of spend impacted (e.g. all OPEX, track renewals, all spend etc.)
RSP/KA9	Finance	The revised Scottish Transport Strategy does not require an increase in OMR expenditure during CP6.	OMR
RSP/KA10	Finance	Data quality for CP6 planning is fit for purpose, and if unexpected volumes of work arise these can be contained through reprioritisation of the plan.	MR
RSP/KA11	Risk	Obsolescence is manageable in line with our obsolescence strategy as at February 2018.	MR
RSP/KA12	Performance	The core plan does not assume further new train introductions beyond those planned in CP5.	O
RSP/KA13	Finance	The plan assumes that any costs relating to additional power supply capacity arising from traction power modelling works are funded as an enhancement.	R
RSP/KA14	Finance	The plan assumes that any outputs of the Varley review into vegetation management in England and Wales will be agreed with Transport Scotland prior to implementation and will be introduced on the basis that they are cost neutral to Scotland	O
RSP/KA15	Finance	Full implementation of the Scotland Gauging Strategy will be subject to Transport Scotland agreeing funding in addition to the core OMR funding settlement	MR
RSP/KA16	Performance	There is no upturn in coal traffic in CP6.	MR
RSP/KA17	Finance	The current ScotRail franchise continues through CP6, and that current alliancing arrangements between Abellio ScotRail and Network Rail continue for this period.	OMR
RSP/KA18	Finance	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

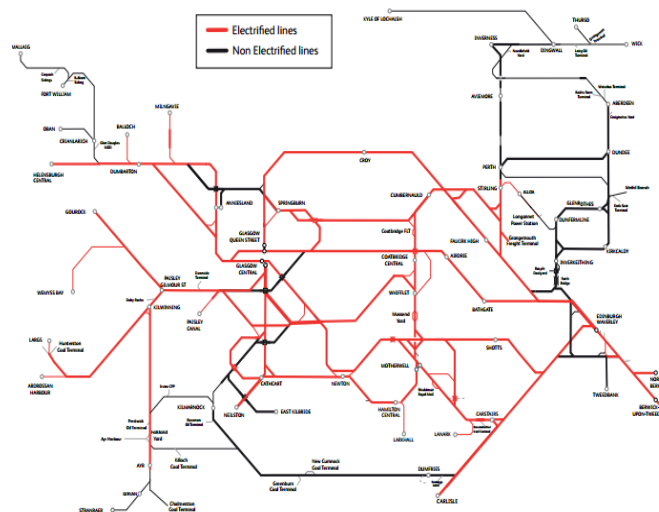
Ref no.	Topic (e.g. access, deliverability, climate etc.)	Assumption	Areas of spend impacted (e.g. all OPEX, track renewals, all spend etc.)
RSP/KA19	Risk	The plan assumes any strengthening of the Queen Street Station barrel roof triggered by adjacent property developments, is funded by these developments or treated as an enhancement to be funded separately.	R
RSP/KA20	Access	Existing rules of the route access arrangements are maintained	MR
RSP/KA21	Finance	We have not made any provision for the impact of new infrastructure schemes external to the railway, for example additional rail works required as a result of the major A9 dualing project	OMR
RSP/KA22	Deliverability	Efficiency savings identified through productivity improvements can realise cost savings through appropriate redeployment of resource or cost-effective reduction in overhead.	OMR
RSP/KA23	Risk	The traction power network has sufficient capacity and resilience to deliver current train plan, this is currently being modelled by Network Rail Design Group.	R

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.” (Minister for Transport and the Islands, 2018)

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 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.

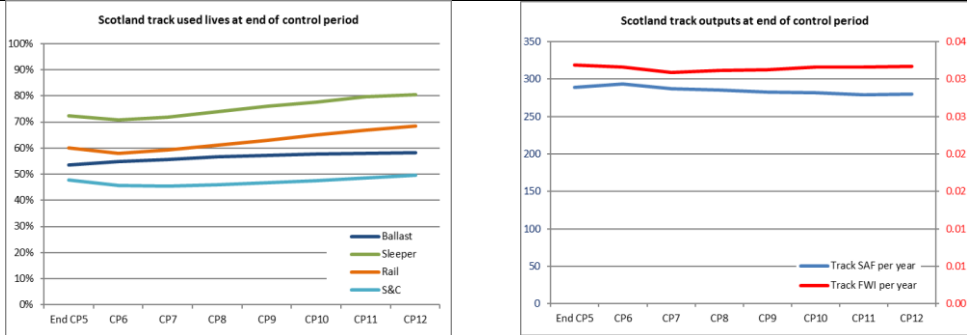
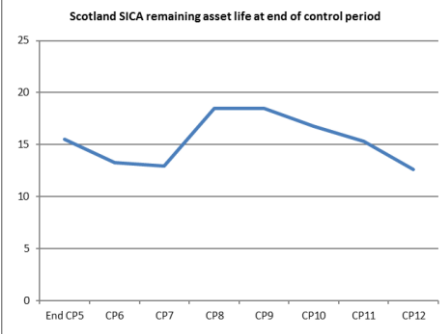
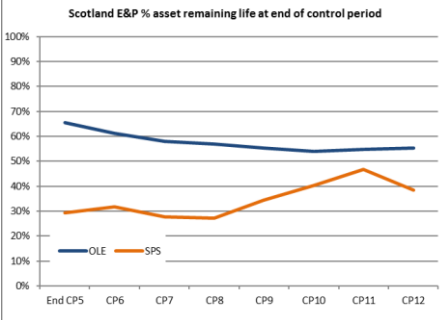
The railway in Scotland has grown significantly.

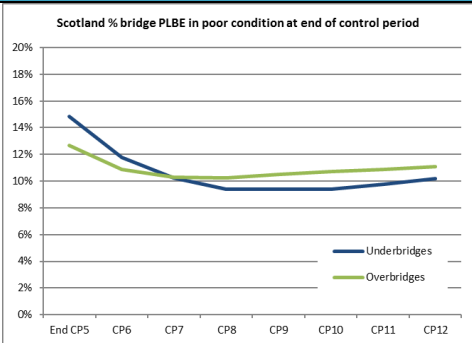
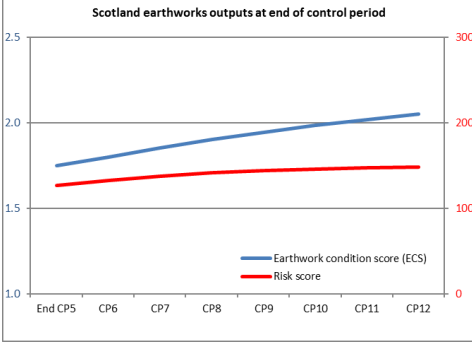
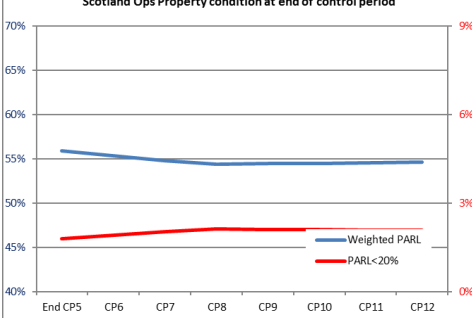


The number of passenger journeys has approximately doubled since 1998, and this growth has been supported by the Scottish Government’s investment in new lines and infrastructure, new stations and new trains. Whilst rail freight in Scotland has been adversely affected by Scotland and the UK’s move towards 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, this will have resulted in a 25% increase in single track kilometres of OLE (since the start of the control period), from 1,671stk to 2,100 stk.

Appendix D - Asset by asset long term forecast

Asset	Condition trajectory	Comment
Track	 Scotland track used lives at end of control period Scotland track outputs at end of control period	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.
Signalling	 Scotland SICA remaining asset life at end of control period	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	 Scotland E&P % asset remaining life at end of control period	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 as well as other asset 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 E - Freight and National Passenger Operators Route Plan

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

This summary sets out how FNPO Route and Scotland Route Business 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.

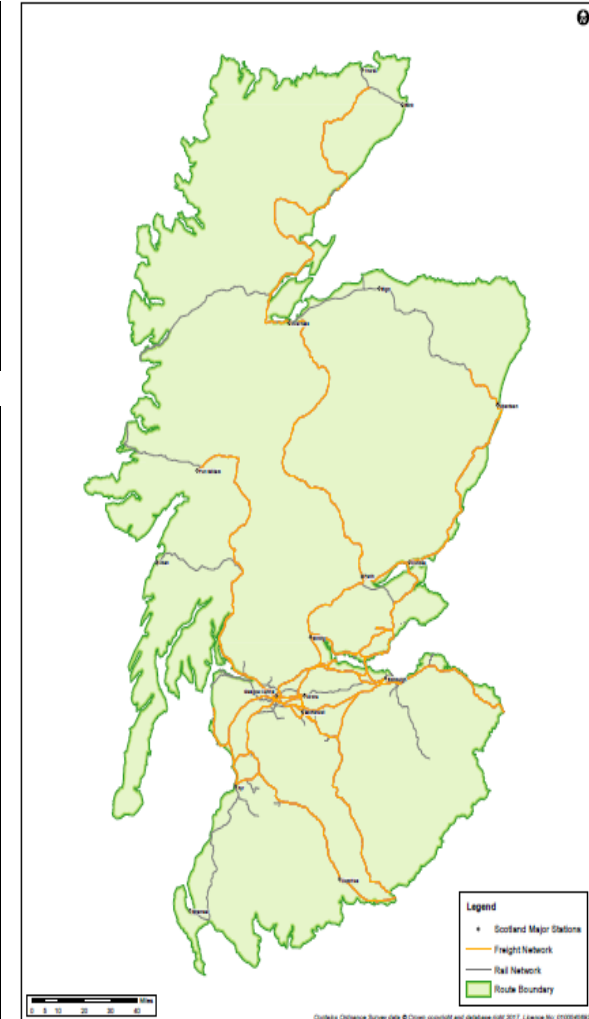
National Passenger Operators:

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.

Key Challenges, Risks and Opportunities

- **Freight Growth:** Transport Scotland (TS) requires Network Rail to lead the Industry to secure at least 7.5% growth (measured in KNTM) by the end CP6. An agreed Industry Plan, which will cover 3 HLOS targets specific to rail freight of growth, average speed improvement and performance and which will encompass
 - Identification of productivity opportunities (i.e. longer, heavier trains, improved operations etc)
 - Clarification of where infrastructure interventions would be required to secure growth
 - Clarification of potential 'trade-offs' to secure growth (i.e. RoTR opportunities, timetabling solutions etc)
 - Review of processes to facilitate encouragement of a flexible approach to new traffic.
 - Improved promotional activity
 will be completed by end March 2019 and delivery of the resultant Action Plans will underpin Scottish Freight Customer requirements through CP6 (and beyond).
- **Gauge Establishment:** Work with Route Business Scotland, SO and the rail freight Industry in Scotland to develop the freight element of the Scottish Gauge Requirement and to protect existing capability as per the HLOS (published and RT3973 permissions). Explore gauge clearance requirements on key corridors and diversionary routes and develop business case to facilitate securing funding for any necessary enhancement works.
- **Disruptive Access Requirements:** 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.



CP6 Delivery Plan (Over and above the specifics detailed in the industry agreed Freight Growth Plan)

Section	Strategy	Specifics	Owner	Timescale
Growth	- Lead response to Transport Scotland challenges: - Development of Industry Plan to target 7.5% volume growth target by end CP6 measured in KNTM - Making rail freight easier for Scottish customers to use - Commodity / area workshops - Flexible approach to new traffic	- Published stakeholder engagement plan to review growth potential. - Secure support for draft Industry Agreed Action Plan - Submit draft Industry Agreed Action Plan to ORR - Develop agreed Action Plans to be delivered throughout CP6 - Submit final Industry Agreed Action Plan to TS / ORR - In partnership with FOCs, End Users and stakeholders document suggestions and, subject to funding where required, promote implementation of the proposals to secure growth.	SRFM SRFM SRFM SRFM / Industry SRFM SRFM / System Operator	Complete Complete Complete End Feb 2019 End March 2019 Throughout CP6
Safety	Reduce Lost Time Injuries (LTIs) on Network Rail yard infrastructure, connecting sidings and walking route conditions	- Publish a rolling programme of joint health and safety visits with customers (FOCs / TOCs / End Users) to agreed sites. - Route Vegetation clearance programme to include Network Yards, Sidings and Walkways - Complete review of authorised walking routes / crew change locations - Provide Scotland freight safety project candidates for the FNPO Safety Improvement Plan (FSIP). - Hold 'Go Look See' with customer within two weeks of any reportable customer LTI event on Network infrastructure.	FNPO Operations and Safety Manager / SRFM	Annual Programme to be published throughout CP6
	Reduce freight train derailments 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. - Review of existing standards to make sure that they are appropriate for each location.	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	Proactive management of On Time targets at all Scottish terminals	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	- Transport Scotland HLOS target of 93% FDM-R 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. - Influence at RSPG to define future asset strategy in terms of renewals to support freight growth - Work with the Route teams to identify the impact of speed restrictions on freight services and work collaboratively to remove them.	SRFM / FNPO Performance Manager	Periodic review of FDM-R delivery and key influencers
	Agreed Joint Strategy with each FOC including details of plans to reduce each delay area	Regular reviews against plan with each route and FOC customer.	FNPO Performance Manager / SRFM / 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	- Delivery of Freight Growth Plan Specific Capacity and Capability Actions. - Proposal of potential freight related projects (enhancements, incremental work and operational solutions) to be regularly incorporated within Pipeline proposals. - Future project specifications to include a specific output level for freight services, that reflects the SSFN specifications and forecast future traffic requirements. - Interactive maps for gauge, RA to be created and maintained - Continued support for longer, heavier trains programme	SRFM Project Sponsor / Lead Strategic Planner / FNPO Head of Strategic Capability / FNPO Head of Network Management	Throughout CP6

	Freight Gauge Specification	- Define Freight Gauge Specification (short / long term) - Produce a database of published gauge plus RT3973 permissions - Work with Scotland Route Business on developing and implementing the Scotland gauging strategy - Define requirements to secure improved gauge and operational flexibility on key freight corridors/diversionary routes and seek funding where required	SRFM / FNPO Head of Strategic Capability / FNPO Head of Network Management / Lead Strategic Planner	Complete Complete Complete Throughout CP6
Capacity & Capability	Management of capability Produce baseline freight statement that outlines HLOS requirements.	- Work with Route Business Scotland on a Gauging Strategy to satisfy HLOS requirements that; - 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 - all Scottish routes are maintained to accommodate 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 - 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	Throughout CP6
	Freight Train Average Speed	- Establish framework for average speed measurement and improvement - Work with SO and Industry as part of the Average Speed Working Group to develop Action Plans - 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	SRFM / SO / FNPO Head of Performance / FNPO Head of Strategic Capability / FNPO Head of Network Management	Metric to be agreed by Industry July 2018 (Complete). Benchmark agreed as Dec 2018 TT change. Ongoing participation in Average Speed Working Group led by SO

	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. • Promote innovative options for temporary or cost-effective connections	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 quarterly
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Appendix F - Supporting strategies

This Appendix lists supporting strategies including the Route specific asset strategy statements for CP6 which summarise how Scotland Route will locally apply national asset policy

- Scotland Route Asset Strategies (Track, Signalling, Electrical Power, Structures, GDOT, Buildings and Telecoms). See below for summary
- Scotland's Sustainable Development Strategy
- Scotland Gauging Strategy
- Scotland Journey Time Improvements Strategy
- Scotland Freight Growth Strategy
- Enabling efficient electrification in Scotland (Efficient Electrification Strategy)
- GB wide Short Form Strategies-
 - System Operator
 - FNPO
 - Contracts & Procurement
 - Corporate Communications
 - Human Resources
 - Information Management (e.g. IMS)
 - Information Technology
 - Quality

Summary of the Route asset strategies

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 renewal 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.

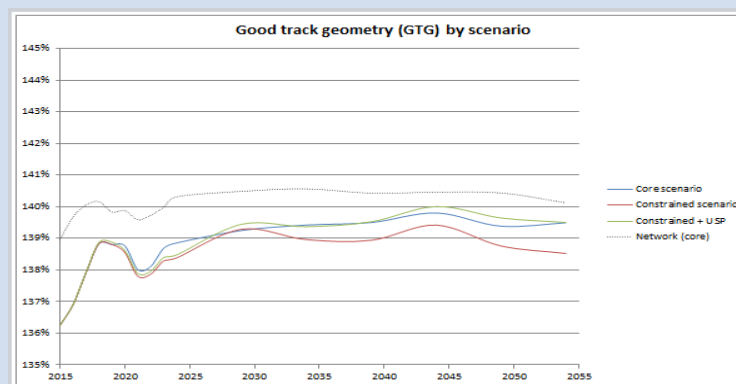
We aim to deliver increased resilience to extreme weather events, reducing disruption to the customers and increasing reliability, through enhanced lineside maintenance and targeted renewals, it is aimed at reducing incidents of line closures and restrictions, as well as reducing recovery time.

Asset Area	Intervention Strategy
Track   	The Track 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 Junction is to renew and rationalise the



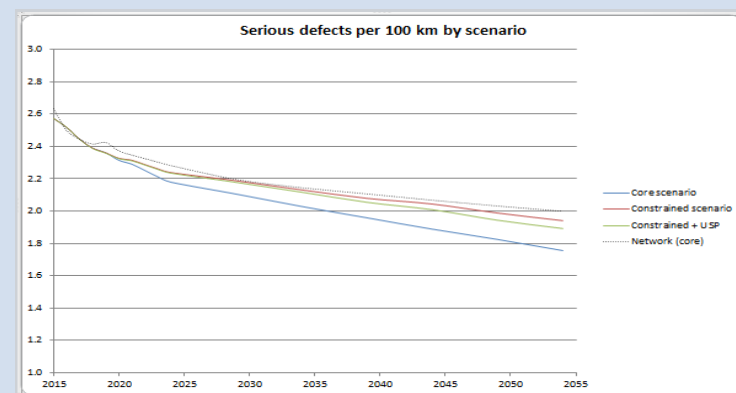
junction in CP6 as well as addressing associated plain line and signalling issues, realising line speed improvements to cross border services as well as Scottish operators. Cause for consideration for enhancement funding to optimise the outputs is being developed.

The charts below are modelled on the 2017 Route submission.



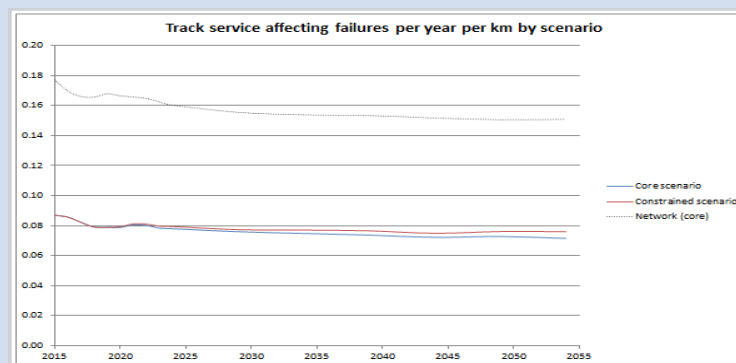
The proposed track renewal programme **will maintain** very similar good track quality levels at the end of CP6 to CP5 exit levels.

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 side wear.

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



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.

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

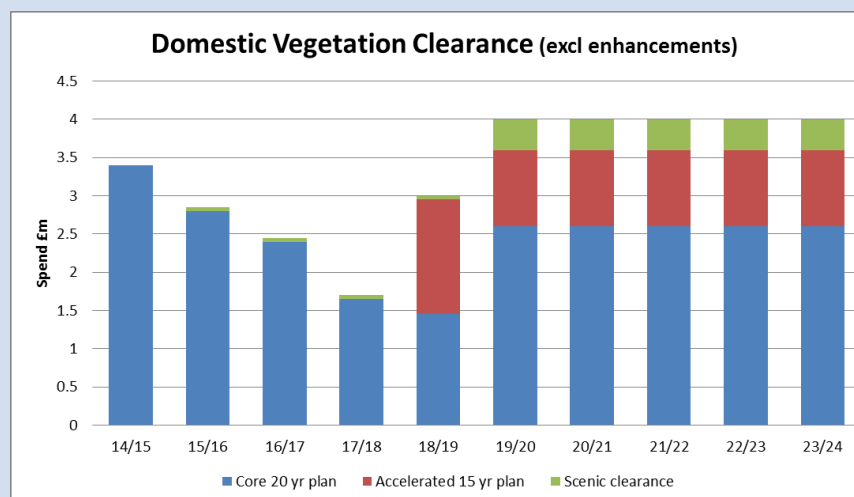


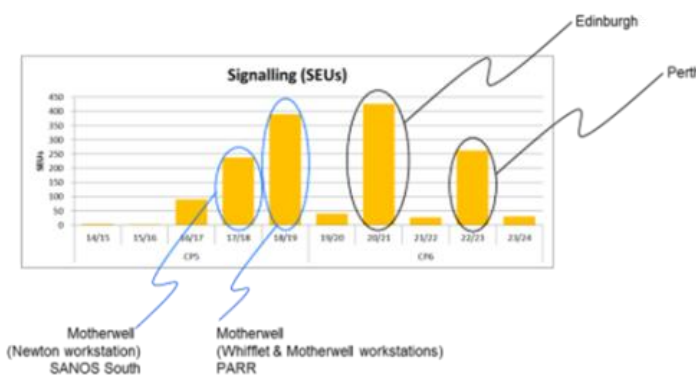
At circa 14 miles, Scotland Route has one of the biggest concentrations of slab track on the network, situated at some of Scotland's most critical urban locations: North Electric and Argyle lines.

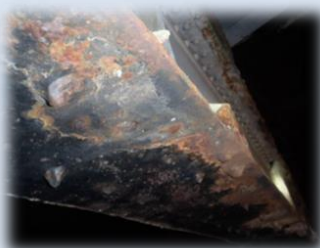
Significantly most of the slab was installed in a short window between the late 70's and early 80's and will require significant additional heavy maintenance or in some cases targeted renewal interventions during CP6 to prevent speeds and maintain PPM.

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 considering 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.

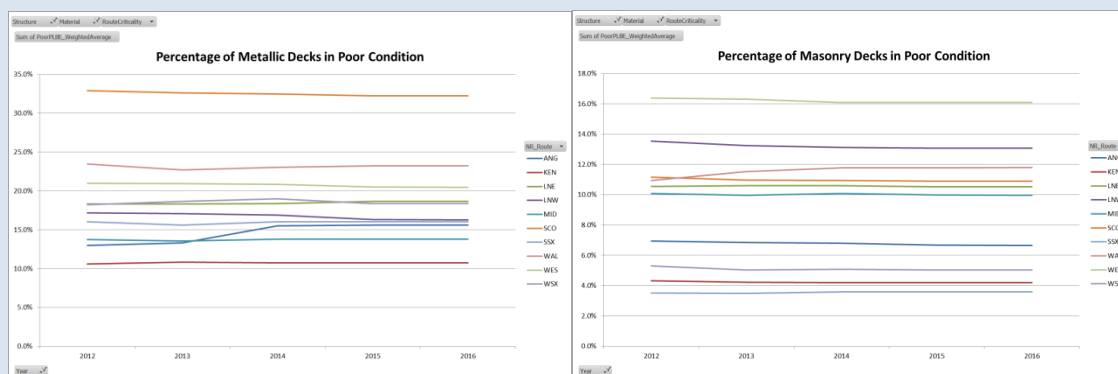
Footbridges - The proposed workbank has been developed from a review of each individual asset.

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 because of a series of asset failures in the current and previous control periods.

Underbridges - CP6 will see a move towards less work on large multi span 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.



	<i>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.</i> <i>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.</i> <i>Vehicle incursions - Remediation of all higher risk (risk score>90) non-public road vehicle incursion sites.</i> <i>Our route specifications for complete structures renewals will seek to progressively improve route capability.</i>
Drainage 	<i>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.</i> 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. <i>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).</i> 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)

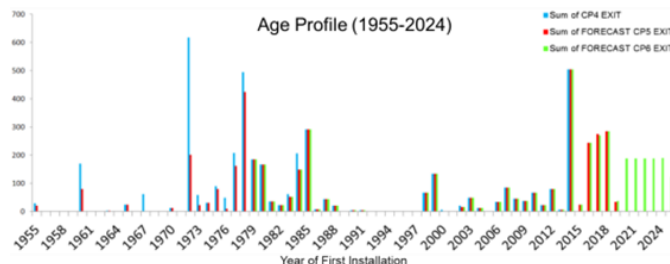
	- Fully determine asset condition (45,000 unscored assets) - Continue high volume, low cost work to improve resilience to adverse weather Photographs illustrate successful drainage work completed in CP5.
Earthworks  	<i>The plan will deliver the modelled volume of activities to sustain asset condition at CP5 exit levels. In addition, the plan will achieve a reduction in the number of earthworks susceptible to adverse weather especially heavy rainfall.</i> <i>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.</i> <i>There is an allowance to increase the use of technology to monitored earthworks assets using movement meters, fibre optic listening and CCTV systems.</i> <i>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.</i> <i>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.</i> 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	<i>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.</i> 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 / train sheds 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.

	<i>Proposal in CP6 to enhance and renew station buildings and environment, improving customer and passenger experience.</i>
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Appendix G - List of supporting annexes

Annex 1: Change log (to be supplied post submission)

Annex 2: Long term scorecard

Annex 3: ABP models

Annex 4: Asset efficiency plans

Annex 5: Deliverability review

Annex 6: HLOS tracker

Appendix H - 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 several 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 Cross-Country, 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
HLOS	High Level Output Specification	The Scottish Ministers' High Level Output Specification for Control Period 6
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 in the event of de-wirement.
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 energised at 25kV.
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 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.
SO	System operator	Network Rail System Operator brings 'whole network' management activities together in one place. These range from long-term strategic planning, through analysing station capacity for passengers or depot and stabling capacity for operators, to managing access to the network by capacity allocation in the timetable (consistent with the industry's Network Code).

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 I - CP6 HLOS Tracker (extract, see annex uploads for full details)

Network Rail Scotland / CP6 High Level Output Specification / Tracker / v7.1							Legend Not yet commenced Ongoing, no significant risk to meeting milestone	Risk ● ●	Legend Complete or nearing so with no risk to milestone Significant risk of not meeting milestone	Risk ● ●	Network Rail		
Requirement	No	Within Route Scorecard?	Senior responsible owner, or industry group lead	Industry agreement?	Element overview	Accountable	Key milestones	Owner	Contains pre CP6 action dates?	Baseline date	Current forecasted date	Risk	
Journey time improvements [1]	1	Yes	Journey Time Working Group	N/A	Working with other parts of Network Rail (including the Scotland route and the FNPO route) and with industry and government stakeholders, develop a plan to deliver the passenger journey time requirements to deliver a mile per minute target of 1.587 (by December 2019) and 1.576 by December 2024. The plan must be: - developed in cooperation with the ScotRail Franchise; - consulted with Transport Scotland and stakeholders; - provided to ORR by 30 November 2018 for review; - finalised and provided to all affected parties by 31 March 2019; and - updated and amended as appropriate through CP6. Throughout CP6, Network Rail must also oversee the delivery of the actions set out in the plan and report on progress.	System Operator	CP6 Journey Time Metrics - Industry Working Group 1 (Agreement of Terms of Reference)	Catherine Hall	Yes	19/06/2018	19/06/2018	●	
							CP6 Journey Time Metrics - Industry Working Group 2 (Agreement of Freight Average Speed Metric, and contents of overall plan)	Catherine Hall	Yes	25/07/2018	25/07/2018	●	
							CP6 Journey Time Metrics - Industry Working Group 3 (Agreement of baseline positions, committed timetable changes, change control process and review of RSPG Sub-Group)	Catherine Hall	Yes	22/08/2018	22/08/2018	●	
							CP6 Journey Time Metrics - Industry Working Group 4 (Discuss timetable opportunities and fleet opportunities)	Catherine Hall	Yes	18/09/2018	18/09/2018	●	
							CP6 Journey Time Metrics - Industry Working Group 5 (Review enhancement funding process and initial draft plan)	Catherine Hall	Yes	17/10/2018	17/10/2018	●	
							CP6 Journey Time Metrics - Industry Working Group 6 (Finalise draft plan for submission to ORR)	Catherine Hall	Yes	19/11/2018	19/11/2018	●	
							CP6 Journey Time Metrics - Industry Working Group 7 (Review feedback from ORR and actions for final plan)	Catherine Hall	Yes	31/01/2019	31/01/2019	●	
							CP6 Journey Time Metrics - Industry Working Group 8 (Update plan and review)	Catherine Hall	Yes	28/02/2019	28/02/2019	●	
							CP6 Journey Time Metrics - Industry Working Group 9 (Finalise plan for submission to ORR)	Catherine Hall	Yes	31/03/2019	31/03/2019	●	
Train Performance [5]	2	No	Lindsay Saddler	N/A	Develop and monitor progress against a suite of KPIs to support delivery of performance and National Rail Passenger Survey (NRPS) targets that are: - developed in cooperation with the ScotRail Franchise; - consulted with Transport Scotland and stakeholders; - provided to ORR by 30 November 2018 for review; - finalised and provided to all affected parties by 31 March 2019; and - updated and amended as appropriate through CP6.	Route Business Scotland	Create a project team from across the Alliance to identify possible KPIs processes and owners	Kris Peacock	Yes	30/08/2018	30/08/2018	●	
							Compile all KPI options liaising with key Alliance Executive members	Kris Peacock	Yes	14/09/2018	14/09/2018	●	
							Consult KPI suite with Transport Scotland	Kris Peacock	Yes	14/10/2018	30/11/2018	●	
							Submit final KPI suite to the ORR	Kris Peacock	Yes	31/03/2019	31/03/2019	●	
							Spare	Kris Peacock	Yes	Input here...	Input here...	●	
Train Performance [6]	3	Yes	Lindsay Saddler	N/A	In Scotland, we will primarily be holding Network Rail to account for delivery of the PPM target of 92.5%. We will hold the route to account against its PPM and RTA targets, in the event of performance being below expectations, we will use CRM-P CP6 baseline trajectory (refer to table A.2 in Annex 2 for details of the baseline trajectory) to provide further insight on the route's contribution to overall performance (reflecting that CRM-P records Network Rail-caused delay only).	Route Business Scotland	CRM-P trajectory to be submitted to ORR	Lindsay Saddler	Yes	13/07/2018	13/07/2018	●	
							Monitored via Route Scorecard	Route Scorecard	Yes	Input here...	Input here...	●	
							Spare	Route Scorecard	Yes	Input here...	Input here...	●	
							Spare	Route Scorecard	Yes	Input here...	Input here...	●	
							Spare	Route Scorecard	Yes	Input here...	Input here...	●	