SCOTLAND'S RAILWAY
BETTER IN THE MAKING

Strategic Business Plan

July 2023

Our Strategic Business Plan for Scotland's Railway

Contents

Chapter One – Context

Our Strategic Business Plan for Scotland's Railway

1. Context

1.1 Purpose of this document

This document is our Strategic Business Plan, which is an important step in the periodic review 2023 (PR23) process. This process determines the outputs Scotland's Railway will deliver in exchange for funding received from Scottish Ministers, and access charges received from train operators, for the period between April 2024 and March 2029 (otherwise known as Control Period 7 or CP7). Throughout this document, we refer to Scotland's Railway as the Scotland region of Network Rail.

This process comes at a time of significant financial challenge for the rail sector as a whole, as well as the Scottish Government. Due to that uncertainty, Scottish Ministers shared their output requirements for Scotland's Railway, set out in its High Level Output Specification (HLOS), and funding available, set out in the Statement of Funds Available (SoFA), on 27 January 2023. This is later than in previous planning periods and consequently this Strategic Business Plan has also been shared later to enable Scottish Ministers requirements to be appropriately embedded in our plan within the available funding.

We will continue to work with our primary funder, Transport Scotland, our regulator, the Office for Rail and Road (ORR) and our stakeholders to refine and improve our plan as ORR sets its Final Determination on the funding and output settlement for the five-year period.

Network Rail has also shared its Strategic Business Plan for England and Wales, responding to the Secretary of State for Transport's HLOS and SoFA for England and Wales.

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1.2 Our purpose

Scotland's Railway provides substantial benefits for the people of Scotland and those who visit here. In 2021/22 there were 52.5 million passenger journeys in Scotland. You can find out more on the 'Regional Rail Usage' statistics page on ORR's website. This was higher than the 15.6 million passenger journeys in 2020/21 but still significantly lower than the around 100 million passenger journeys in 2019/20. Scotland's Railway also provides a vital, sustainable, route to markets, supporting our economy and reducing harmful emissions. For example, in 2021/22, freight customers moved 4.2 million tonnes of goods by rail. You can find out more on the 'Scottish Transport Statistics 2022' page on the Transport Scotland website.

More widely, the railway is also a major contributor to sustainable economic growth, is working hard to positively improve the environment, and is a key contributor to an integrated public transport network and Transport Scotland's overall priorities.

In the face of challenges, we're proud of what we have achieved across the current five-year control period (from April 2019 – March 2024). Below are some of our highlighted achievements:

- We ensured that the railway continued operating during the COVID-19 pandemic, ensuring key workers could get to their places of employment and businesses could move their goods to market.

- In 2021 the world descended on Glasgow, and onto our network, for the Climate Change Conference of the Parties (COP26). We delivered brilliant transport links for delegates from around the world and showcased our green credentials. Our station teams welcomed thousands of passengers including royals, celebrities, dignitaries, and delegates

- We've responded to the challenges of increasingly extreme weather. Examples include accelerating deployment of technology including tilt meters, delivery of an ambitious bridge scour protection program, recruitment of dedicated meteorologists within Scotland's Railway Control, and improvements in drainage asset management

- We've worked in partnership with the rail freight sector to grow the volume of goods moved by rail, including opening a new freight terminal at Blackford for

the sustainable transport of bottled water, an expansion of Tarmac's operation at Dunbar, and the development of several new traffic flows which will replace the requirement for hundreds of thousands of lorry moves each year

- We've delivered major renewals works on the Argyle line and at Carstairs, modernising infrastructure at a critical junction for passenger and freight users

- We're supporting a larger and more complex network due to new stations that were added, supported by Enhancements funding that sits outside of the Periodic Review process.

We're proud to continue growing the railway in Scotland and have great ambitions for the impact that we can make over the next five years to make this the best railway Scotland's ever had.

Our overarching vision for the next five years is to continue to put passengers and freight first. Throughout this Strategic Business Plan, we set out how we'll deliver Transport Scotland's strategic objectives for the next five years supported by our vision and our objectives:

- Safe, robust and reliable services

- Optimum use of capacity and capability

- Managing down the 'net cost' of the railway and delivering value for money

- Effective integration between track and train

- Inclusive and sustainable economic growth

- Achieving net zero and climate change adaptation and resilience.

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Figure 1.1: Scotland's Railway vision and objectives

OUR VISION:
Putting passengers and freight first

OUR PURPOSE: Connecting people to places and goods, driving economic growth

Everyone home safe every day | Reduce net cost of railway | Deliver Net Zero | Run a reliable railway | Track and train working together

Supported by and aligned to Network Rail's strategic themes:

Safety | Efficiency | Sustainable Growth | Train Service Delivery | Customer & Communities

Underpinned by our people, who do their best work to create the best railway Scotland's ever had

1.3 The strategic context

The Scottish Government sees rail as a significant priority and the financial settlement for infrastructure is one of its largest multi-year capital investment commitments. It is also committed to supporting the railway to reduce its carbon emissions, as well as being a significant contributor to delivering net zero in its overall transport strategy for Scotland. The transport sector in Scotland is the largest contributor of carbon emissions, however, as rail is the greenest form of large-scale transport, it's critical we can continue delivering low carbon transport to customers. Therefore, moving passengers and freight from less sustainable modes of transport towards rail is vital to delivering Net Zero Scotland by 2045.

We're encouraged that, in challenging financial circumstances, the Scottish Government has continued to emphasise its ambition for the railway by protecting the funding available to Scotland's Railway in the next business planning period - even increasing it by around 1%, in comparison to the last control period, when adjusted for inflation.

While we're aligned in our high-level ambition and objectives for the railway, it's important to consider the extremely challenging environment in which the railway is now operating.

There are four contextual factors that shape our approach to CP7, and this plan:

- Our **experience in CP6**, where many of our challenges emerged
- Ongoing **financial challenges** and constraints
- Our position in the **renewals life cycle**
- The need to build **resilience against climate change and weather events**.

We discuss each of these in turn below.

CP6 experience

There have been real challenges to overcome during CP6. Towards the end of the first year, the COVID-19 pandemic began to drive significant additional spending that persisted for much of the control period and could not have been anticipated in the original business plan. Recovery from the pandemic has also reduced passenger numbers as new hybrid working arrangements emerged across the economy. While the leisure market has recovered quickly, and in some areas exceeded pre-pandemic levels, the change in passenger demand has translated into a slower return for the business and commuter markets. The tragic loss of three lives as a result of a derailment at Carmont in August 2020 underlines the complexities of running a safe and reliable railway in Scotland's diverse landscape and climate. Scotland's Railway has worked hard to learn the lessons from that event to further minimise the risks of similar accidents in the future. There has also been much higher than anticipated spending on compensation for train operators as a result of an increasing number of adverse and severe weather events and industrial action. Finally, a range of global and domestic events have resulted in high inflation rates not experienced for a generation.

There's been a need to respond to these events by making changes, some significant, to the original CP6 business plan. Some planned asset renewals have had to be deferred,

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and some programmes of activity have not been delivered as planned or changes have been made to their scope. The volume of asset renewals we had planned to deliver in CP6 has been substantially revised to respond to the need to reprioritise, with reductions overall and particularly significant reductions in some areas. As a consequence, we will be unable to meet the original efficiency targets, since the efficiency yield falls in line with the volume of activity delivered.

Despite that, we've delivered other efficiencies not in our original plan. We've, through the Modernising Management initiative, improved our efficiencies in support functions and helped our organisation better target its work in future.

Ongoing financial challenges

Scotland's Railway is exposed to high levels of general inflation prevalent in the economy, as well as some commodity-specific price increases. Although CP7 funding is forecast to protect our funding in real terms, our input prices are still forecast to increase beyond assumed general inflation. We estimate that this will put c.£150 million of pressure on our funding settlement over and above the Consumer Price Index (CPI) inflation. We recognise that ORR have a different estimation of the impact of input prices in their Draft Determination.

The economic and financial context underlying the preparation of this plan is unlike those facing many other control period planning exercises faced in the past. At the time of writing, the current CPI rate of inflation is 7.9%, almost four times the Bank of England's target rate of 2%. Public sector net borrowing has reached near record levels in recent months, largely driven by the government's response to high energy costs for consumers and businesses as well as the costs of previous borrowing. The Scottish Government's most recent Budget for 2023/24 recognises the constraints it faces and the volatility of the environment in which decisions on capital projects are having to be made.

Renewals life cycle

As in other industries with large asset bases with long operational lives, the investment profile for asset renewals is not always smooth. In facing trade-offs, we've developed an affordability-driven approach to renewals expenditure, which will transition our workbank mix from more full renewals to a blend of full renewals and life extending interventions. We will focus our activities on providing a safe and reliable railway, while reducing costs

in the next five-year period. This will impact overall asset condition, but we believe that potential risks can be mitigated by applying more targeted refurbishment and maintenance interventions, underpinned by our market-led approach. We're further enhancing the value delivered to our customers by focusing more of our efficiency plan on changing how we deliver, in addition to what we deliver.

Climate change resilience

A key factor in CP6 was our need to react more frequently to severe weather events. This demonstrates the need for ongoing change in requirements as we seek to embed climate change resilience across the network.

We're having to do more to guard against the challenges of a changing climate. The impact of climate change, and in particular increasing rainfall, is affecting Scotland more significantly. As a result, we're proposing to increase investment in our earthworks and drainage assets to improve the resilience of the network. Additional activity on drainage complements other works to provide climate resilience benefits.

During CP7 a longer-term climate change adaptation strategy and pathway for Scotland's Railway will be developed alongside improvements to how we assess and understand the impacts and risks associated with climate change on our railway.

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1.4 Guide to this submission

This strategic business planning period comes at a time of financial uncertainty for both the railway and public finances generally. We acknowledge that in challenging financial circumstances, the Scottish Government has reflected its ambition for the railway by protecting funding available to Scotland's Railway in the next strategic business planning period. Scotland's Railway is proud to support Scottish Government's ambitions for the railway, but we also recognise that the next funding period will be challenging.

To meet the wider financial challenges, we're setting stretching targets for our ability to deliver efficiently. We'll make a step-change in how we plan and deliver investments, including how we engage with our important supply chain partners and the measures we will take to improve value for money – not just in CP7, but over the longer term.

The financial figures in this Strategic Business Plan are presented in real terms in 2023/24 prices, after the application of efficiencies and headwinds unless otherwise stated. Inflation forecasts are based on the November 2023 Office for Budget Responsibility CPI forecast in line with the England & Wales Strategic Business Plan submitted in February. We have included a separate line item in our financial tables to reflect changes from November 2022 to March 2023 OBR inflation forecasts. Our plan is based on an assumed CP6 exit position which is based on our rolling forecast which was developed in Period 9 (November) of 2022/23. Network Rail reports a rolling forecast to ORR on a periodic basis and has 13 periods in a financial year.

This plan responds to Scottish Ministers' HLOS, which was published on 27 January 2023. Many HLOS requirements feature within the main body of the plan. Wherever this is the case, blue callout boxes are included at the start of the relevant section, setting out the numeric HLOS requirement identifiers and corresponding thematic topics.

The blue callout boxes are intended as a guide for the reader. As such, content relating to HLOS requirements included in this document is not exhaustive. Also note that we've incorporated the Secretary of State for Transport's HLOS requirements wherever these apply to the topics of safety and accessibility as these are not powers devolved to the Scottish Government.

This Strategic Business Plan has been developed based on Scottish Ministers HLOS and SoFA.

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1.5 Structure of this document

The remainder of this document consists of the following chapters:

- **Chapter 2: What the plan delivers.** In this chapter, we set out how we will support the delivery of the five Scottish Government objectives in CP7

- **Chapter 3: The components of our plan.** In this chapter, we provide more detail on our approach to asset management and planned operations, maintenance, and renewals activity as well as any longer-term impacts of these plans. We also provide an overview of our operations activity in CP7, our train performance trajectories, as well as a summary of support, expected income and industry costs expenditure

- **Chapter 4: Our consolidated financials.** In this chapter, we set out what we plan to spend over CP7 to operate, maintain, and renew the network and the income we expect to receive. We explain how we have considered efficiencies, inflation, headwinds, and input prices in the development of our plan. We also set out our approach to a risk fund

- **Chapter 5: Assurance and Deliverability.** In this chapter, we describe the assurance framework and set out how we plan to manage change. We also set out how we have, and will continue to, engage with our supply chain in our planning for CP7, as well as our assessment of the deliverability of our plans for CP7

- **Chapter 6: Next steps.** In this chapter, we set out our next steps to support the remaining work on the 2023 periodic review, and the development of our CP7 Delivery Plan

- **Annex 1 – Assumptions.** In this chapter, we set out our key assumptions.

Chapter Two – What the plan delivers

2. What the plan delivers

2.1 Introduction

We share Transport Scotland's ambition for both the railway and Scotland's transport sector as a whole. For each of Transport Scotland's objectives for the railway, this section sets out what we, alongside our industry partners, plan to deliver in CP7, as well as explaining our considerations while developing our plans to deliver our outcomes for passengers, freight customers and the taxpayer, and the specific activities that will help us to achieve them.

Given the financial and other challenges we face, as described in Chapter 1, our CP7 plans are prioritised to deliver the most important goals in the coming five years while preparing for CP8 and beyond.

This means focusing on continuous improvement in safety, delivering challenging passenger and freight train performance targets, and facilitating strong passenger and freight growth on the network. We have developed an affordability-driven approach to renewals, focussing on the highest safety and reliability risks in the next five year period. As such, we are planning to undertake more targeted refurbishment and maintenance interventions to mitigate potential risks.

It's important we have a clear statement of what we'll deliver in CP7 for several complementary reasons:

- To be aligned in our **strategic purpose**, particularly with funders and users of the railway

- To check we have the right **scope,** as there is a direct relationship between scope and funding requirements

- To achieve clarity around what an **outcome means in practice**; how we convert a high-level concept to something tangible we will deliver

- To enable us to **measure success** by highlighting the metrics we will use to track our progress and provide feedback. This will also provide the information that ORR requires to hold us to account on an ongoing basis.

The importance of flexibility in how our outcomes are defined and monitored must be an essential part of ORR's Final Determination and its approach to managing change in CP7, recognising the considerable challenge surrounding our CP7 planning work as well as the transition to closer track and train working in CP7.

This chapter aims to deliver against these objectives as we expand on each of the five themes in turn and describe the output assumptions underpinning this business plan. A summary of our approach is set out in the following table.

The outcomes in this section provide evidence that addresses ORR's core outcome success measures and supporting measures. We'll continue to engage with Transport Scotland, ORR and our customers and stakeholders to refine these measures as defined by Scottish Ministers in their HLOS.

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Table 2.1: Summary of our approach to outcome measures

Theme	CP6 scorecard metric	CP7 success measure	Measures	CP6 exit forecast[1]	CP7 exit ambition
Everyone Home Safe Every Day	✓	✓	Fatality weighted index (FWI - workforce)	0.055	0.047
	✓	✓	Train accident risk reduction (TARR)	95 %	95 %
Run a Reliable Railway	✗	✓	Passenger on time	66.75 %	68.00 %
	✓	✓	ScotRail public performance measure (PPM)	89.80 %	92.50 %
	✗	✓	Passenger cancellations	3.4 %	3.0 %
	✓	✗	Freight delivery metric (FDM-R)	92 %	Replaced by FCaL
	✓	✓	Freight cancellations	2.44 %	2.00 %
	✗	✓	Freight Cancellations and Lateness (FCaL)	6.08 %	5.50 %
	✓	✗	Service affecting failures	1,821	1,885
	✓	✓	Composite reliability index	29 %	-3.5 %
	✗	✓	Composite sustainability index	3.25 %	-0.10 %
Reduce the net cost of the railway	✓	✓	Financial performance measure (FPM)	0	0
	✗	✓	Efficiency (£ million)	398	380
Track and Train Working Together	✓	✓	Passenger satisfaction	8.03	8.07
	✓	✓	Managed stations satisfaction	70.0 %	70.8 %
	✗	✓	Freight growth (net tonne kilometres)	7.5 %	8.7 %
Deliver Net Zero	✗	✓	Carbon emissions -scope 1 and 2	-25 %	-46.2 %
	✗	✓	Biodiversity units	N/A	2.5

Our baselines for CP7 are dependent on the CP6 exit position. Throughout 2023 we expect to review and update our CP7 forecasts on the basis of updated CP6 exit levels, recognising ORR will need to make its determination in October 2023. On time is generated using a regression model and inputs are ScotRail Trains PPM forecasts. CP6 PPM is as traditionally defined, however CP7 PPM trajectory includes a derogation for severe weather and connections as defined in the HLOS. The name for the CP7 measure

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has yet to be confirmed. Efficiency estimates in table 2.1 set out the cumulative CP6 exit forecast as well as the cumulative CP7 forecast.

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2.2 Everyone home safe every day

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Weather Resilience	3.35, 3.41 (provision for weather resilience)

Note that this section also addresses our safety obligations as set out in items 12-16 of the Secretary of State for Transport's HLOS requirements.

Our safety vision is "everyone home safe every day". In CP6, an average of 64 colleagues were injured each year, with 18 of those colleagues requiring time off to recover from their injury. A colleague lost their life in a workplace accident in Glasgow and three people lost their lives as a result of the tragic accident at Carmont. As a result, our vision is not being realised in CP6.

Our CP7 focus will be achieving our vision. To do this we'll leverage the opportunity technology and new ways of working afford us, including embedding initiatives that began in CP6. We'll embed, refresh, and sustain our safety culture programme throughout CP7 to improve our health and safety performance:

- Our safety task force was formed to tackle near misses on track between staff and trains

- Scotland's Railway has worked hard to learn the lessons from the tragic loss of three lives as a result of a derailment at Carmont in August 2020 to further minimise the risks of similar accidents in the future

- We've launched our safety framework across the company, which focuses on locally led improvements, driven within the central compelling framework of getting everyone home safe every day.

Significant progress has been made in CP6 so far but more remains to be done. Key for CP7 will be the implementation of our safety framework, set out in figure 2.1 below,

which will drive safety improvement through a compelling vision, national and local plans, and strong governance to create local ownership, promote best practice, and drive continuous improvement.

Figure 2.1: Our safety framework

	Safety Culture	Scotland's Railway will create a culture where there's no doubt you're cared about, where the behaviours you see match up with our vision to get everyone home safe every day - and, where that's missing, you know it's your responsibility to challenge and that speaking up is both expected and welcome.
	Safety Leadership	Scotland's Railway will deliver strong safety leadership that provides consistent messages, direction, and examples at all levels of our organisation.
	Communication	In Scotland's Railway, safety communications are always robust, simple, and in real time. Our teams value and prioritise safety conversations above everything else. Frontline leaders possess effective communication skills to help promote and foster good working relationships at all levels.
	People and Capability	Scotland's Railway recognises that people, not just process, deliver safety. Being healthy, well, and fully equipped is fundamental in developing and delivering arrangements and processes to enable health and safety.
	Risk and Assurance	Scotland's Railway will put the assessment of risk and the line of sight to controls at the centre of our decision-making process. We'll deliver effective assurance arrangements and demonstrate we're in control of and managing risk to our colleagues, customers, and the public.

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Our plan includes several initiatives which support the continuous improvement of safety from CP6 exit levels while improving public, passenger and workforce safety. This is in addition to focusing on key risk areas such as earthworks and drainage systems to improve weather resilience.

We'll continue to deliver our level crossings risk control strategy to improve level crossing safety, take steps to reduce suicide and trespass and tackle the causes of serious events that impact our infrastructure.

To sustain our achievements, we'll complete the maturing of our risk management maturity model and maintain our work on improving risk controls within the business and supply chain.

We'll continue to focus on ways to reduce train accident risk through:

- Targeted passenger and public safety improvements, including level crossing and boundary fencing to reduce trespass, fatalities, and incursions on the line

- Continued deployment of remote failure detection technology to earthworks

- 24/7 investment in real-time weather monitoring

- Deploying speed restrictions, applied to mitigate safety risk, during extreme weather

- Increased investment in drainage assets and vegetation management

- Workforce safety improvements including maintenance scheduling and more intelligent infrastructure

- Additional increased protection of line blockades and greater use of technology to remove workforce from the risk of machine and train movements.

In addition to maintaining compliance with legislation on occupational health, we'll actively seek new ways to improve the mental health and wellbeing of our workforce through targeted assessment, risk profiling, and intervention to support and prevent harm from a risk that is of rising concern across many industries. Linked to the national strategy, we've included £3 million in our plan to implement a Scotland health and wellbeing plan, which will have two main areas of focus:

- Management of occupational health risk, which focuses on improvements to process, appropriate use, and awareness/training to meet statutory health risk requirements

- Health promotion, which will focus on supporting heathier choices for our colleagues to be well at work.

We want to create a culture where there is no doubt our colleagues, passengers, and the public are cared about. We want behaviours that match up with our vision to get everyone home safe every day.

Our safety culture programme is currently underway in CP6 and will continue to deliver outcomes in CP7 to sustain and improve our performance. To robustly demonstrate our commitment to our safety culture programme, we're seeking to make improvements in workforce welfare and accommodation facilities in locations where track workers and our frontline workforce deliver essential work. Our focus on compliance and improvement in this area also links to our refreshed approach to compliance with our obligations to manage fire risk, with a revised approach to risk assessment.

We've included £4 million in our plan to aid improvements in safety culture and leadership, safety communications, safety capability, and risk and assurance.

We will align with internal and external national requirements to get the maximum benefit from national programmes to reduce risk within Scotland's Railway. Alignment of our safety framework exists with the Network Rail home safe plan and the Rail Safety and Standards Board's leading health and safety on Britain's railway.

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Measuring outcomes

Our ambition to deliver a plan that will get everyone home safe every day will be formally measured through two key outcomes. These outcomes assess our efforts to provide the safety of the railway and guard against risks from adverse weather conditions, both now and in the future.

Safety	↑	• Our ambition is to continuously improve safety outcomes for our staff and our customers. We will be measured on train accident risk reduction and fatality weighted index.
Weather resilience and climate change adaptation	↑	• Our strategy recognises the need to change the way we scope works to keep the railway safe and provide resilience to future weather conditions. • In order to improve resilience against extreme weather, we've increased investment in drainage, earthworks and structures assets, recognising – in particular – improved asset knowledge on drainage.

The following table provides further detail on the metrics we're tracking to measure our progress against our planned outcomes throughout CP7.

Table 2.2: Everyone home safe every day – outcome measures

Measures	CP6 exit forecast	Proposed baseline				
		24/25	25/26	26/27	27/28	28/29
Fatality weighted index (workforce)	0.055	0.054	0.052	0.049	0.048	0.047
Train accident risk reduction	95 %	95 %	95 %	95 %	95 %	95 %

In CP7, we'll track safety through two measures, the fatality weighted index and the train accident risk reduction metric.

- **Fatality weighted index** is the standard accepted measure for the value of the incidents prevented on the railway. Our baseline profile for CP7 is set so there is a 15 % reduction in our fatality weighted index metric by the end of the control period. This is dependent on our year-end performance exit.

- **Train accident risk reduction** measures the achievement of the key risk reduction activities planned in a given year. Over CP6, our train accident risk reduction measure will improve to 95 %. Our baseline is to maintain this level of attainment.

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2.3 Reduce the net cost of the railway

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	HLOS references
Patronage and revenue growth, service quality, whole industry financial view	3.20, 3.21, 3.43 (whole industry financial view)

The railway should not expect passengers or the taxpayer to fill the revenue gap experienced following the COVID-19 pandemic. Steps have already been taken to attract passengers back and leisure travel has recovered well but, at least in the short-term, changes to working patterns have seen a shift to hybrid working, resulting in fewer commuters and fewer business trips, with virtual meeting technology now proving to be a key source of competition for the railway.

The Scottish Ministers' HLOS requires Scotland's Railway to take all reasonable steps to work with train operators to secure year-on-year growth in rail patronage and, consequently, real terms revenue across CP7. It also makes it clear Scotland's Railway should take similar steps to improve service quality and revenue protection, especially at the major stations we run at Glasgow Central and Edinburgh Waverley.

This means that we must work even harder with train operators to build confidence in the railway across several areas:

- Demonstrating to passengers that the railway is the safest and most convenient way to travel

- Improving journey times where we can, and having a strong performance regime that gets trains to their destinations on time

- Reducing the carbon footprint of the railway, reinforcing our position as the most environmentally sustainable way to travel and move goods

- Delivering value for money for passengers, freight customers and the taxpayer

We also need to focus on cost. The railway is made up of many different organisations, all of which have revenue and cost challenges. To be successful, we need to ensure that decisions are taken in the best interests of the railway overall, rather than have a focus on individual organisations.

The railway is heavily subsidised, with costs in excess of revenues, even prior to the COVID-19 pandemic. This means we need to have focus on reducing net-cost. This might be about reducing cost directly or, conversely, investing where it will raise greater revenues. Infrastructure investment decisions should be focused on value for money for Scotland's Railway and at the lowest reasonable net cost for the railway overall.

The corridor-based approach of this business plan will be a key enabler to delivering more efficiently in areas such as access. This will contribute to reducing net cost, as well as delivering reliable performance, day after day.

We already work closely with other train operators but there's more we can do on integrating operational decision-making across different parts of the railway, particularly now the main train operator in Scotland, ScotRail Trains, is under public ownership. The need to work collaboratively applies equally to decisions that directly impact passengers and freight users, as it does to how we provide back-office, support, and similar services.

As we develop this business plan and move towards producing the delivery plan for CP7, we'll agree with Transport Scotland a series of performance indicators that will allow us to measure how successful we are at helping to increase revenues and to reduce the net costs of the railway overall.

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Measuring outcomes

Measuring the net cost of the railway is a complex task, particularly when there are substantial fixed costs in assets with long lives.

In the immediate term, our focus is on reducing the net cost of managing our infrastructure, and the primary financial objective of achieving £380 million of efficiencies in CP7. Reducing the cost of managing our infrastructure will be a necessary condition to enabling the railway to grow in Scotland in the future.

Most of our income takes the form of a fixed grant from the Scottish Government, together with fixed access charges. However, our ability to increase our variable income from our commercial and retail property assets is a contributor to our overall success measures.

Our aim to reduce the net cost of the railway will be measured through the efficiencies we'll deliver from a combination of incremental improvements and step-changes which will take advantage of opportunities for modernisation.

Effective financial control and stewardship will be demonstrated by our ability to operate within a fixed financial settlement whilst implementing the changes needed to achieve the required reduction in net cost.

Variable income – property retail income	↑	• Income from rent from our commercial and retail property estate.

Reported financial performance against SoFA	↑	• Current and forecast financial variances against SBP/SoFA projections.

Scotland's Railway efficiencies	↑	• Our plan recognises the challenging financial position in the rail industry • We aim to deliver £380 million of efficiencies in the control period through continuous improvement delivered via incremental changes in our current ways of working, combined with more transformational activities delivered through a structured programme of change.
Business change programme	↑	• To enable our ambitions outlined in our business plan, we've set a stretching target on efficiencies which will need us to modernise some of our working practices. This will require us to improve on our performance in the current control period • This programme is still in development, but we believe we have sufficient opportunities to deliver the full efficiency target over the course of this five-year period.

The following table and subheadings provide detail on how our efficiencies and change programme will be measured across CP7.

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Table 2.3: Reducing the net cost of the railway – outcome measures, £ million

Measures, £ million	CP6 exit forecast	Proposed baseline				
		24/25	25/26	26/27	27/28	28/29
Financial performance measure (FPM)	0	0	0	0	0	0
Efficiency (annual, £ million)	72	31	68	83	93	104

developed, in collaboration with our key stakeholders, as we work towards producing our delivery plan.

In table 2.3, the CP6 exit forecast for efficiency refers to CP6 Year 5 exit. Our cumulative CP6 exit forecast is £398 million. In total, the efficiency measure sums to £380 million of efficiencies which we expect to deliver over the course of CP7.

In CP7, we'll be held accountable on two measures of financial performance: Financial Performance Measure and Efficiency.

- **Financial Performance Measure:** The Financial Performance Measure compares income and expenditure to the financial assumptions underpinning our funding. These include efficiency improvements that are expected to be achieved in CP7. If Scotland's Railway has spent less and/or received more income than the baseline (for what it has delivered), it will report financial outperformance, and vice versa.

  Our CP7 baseline will be to target zero in each year of the control period.

- **Scotland's Railway efficiencies:** In CP7, the monetary value of our efficiencies will be monitored through regular, established efficiency reporting. The metrics shown in table 2.3 refer to total efficiencies. Additional components of our efficiencies programme will be reported centrally in region-by-region papers.

  Our CP6 exit forecast for efficiencies is £398 million in cumulative terms across the control period, with £72 million of those efficiencies forecast to be generated in 2023/24. Our CP7 target is £380 million. Our efficiency plans will be further

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2.4 Deliver net zero

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Environmental sustainability, carbon emissions, weather resilience	3.35, 3.36, 3.37 (sustainability strategy, Scope 1 and 2 carbon metric, renewals climate benefit and resilience, climate objectives, sustainable business), 3.38, 3.39

Encouraging more customers to choose rail

Scotland's Railway will contribute towards the Scottish Government's net zero commitments by taking a market-led approach to encourage more people and businesses to choose rail as part of their sustainable journey, improving the net cost of the railway and reducing the cost of the public service we provide. As such, the strategic approach requires us to make best use of our infrastructure for maximum economic and social gain. This requires a depth of understanding at a local, regional, and national level to maximise:

- The number of passengers on a train
- The volume of freight moved (tonnes lifted) per train path or, for light commodities such as express freight, the number of train paths utilised for freight services
- The customers utilising charter and leisure services

This is further reflected in the considerable changes in demographic, economic and societal factors, including more flexible working and a projected fall in the proportion of the working age population across Scotland over the next two decades. However, opportunities include a growth in leisure travel and significant projected population growth in the central belt, along with encouraging modal shift to rail through access improvements and seamless transport integration.

To deliver this shift, Scotland's Railway must deliver a safe, reliable and affordable railway, in collaboration with our train and freight operating partners.

Environmental Sustainability

While rail is already the greenest form of mass transport, we'll work in partnership with Scottish Rail Holdings, ScotRail Trains Ltd and other external stakeholders throughout CP7 to make it even more sustainable, contributing to wider Scottish Government objectives.

We know that, as our climate changes, it's increasing the frequency, and often the severity, of extreme and adverse weather events. This is leading to increasing risk for our assets, with repercussions for our operations, performance, and the level of unplanned disruptive works on our network.

As well as delivering key short-term climate resilience benefits for our railway through asset renewals, we're committed to producing a longer-term climate change adaptation strategy for our railway, using the adaptation pathways approach, and transforming our approach to assessing climate risk. This will inform the adaptation decisions we need to take to create a climate-ready railway that is fit for the future.

During CP6, we undertook work aligned to the Science Based Targets methodology and Scottish Government climate change targets to understand our full carbon footprint throughout our value chain. We know the reductions necessary across all 'scope' categories to reach net zero and the actions we need to take to get there. Our footprint across all emissions scopes will be combined with ScotRail's once they are available to provide an overall picture of emissions across Scotland's Railway and understand the required reductions, for both track and train, to achieve net zero by 2045.

Whilst spend in CP7 is specifically targeted towards our operational emissions, we acknowledge the much wider carbon impact the railway has and will work to influence our wider value chain to reduce those emissions, which sit in Scope 3 (associated with indirect emissions, associated with supply chain). In CP7 we will continue to improve our understanding of our full impact, enhancing data accuracy, range and availability, (particularly for Scope 3) and will develop ways to articulate our carbon impact in relation to passenger and freight volumes.

To minimise our own operational emissions, we'll continue to drive forward our plans to transition our road vehicle fleet in Scotland to electric vehicles, including the provision of the necessary charging infrastructure to enable this change.

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We'll strive to be more efficient with the energy we use, implementing energy efficiency measures where most appropriate. We'll look to make best use of alternative funding models such as Energy Performance Contracting to deliver more in this area. Through energy procurement mechanisms, we'll strive to make sure that all our non-traction electricity use in our buildings and operations is from renewable energy sources.

Offsetting residual Scope 1 emissions (emissions we produce directly) and scope 2 emissions (emissions we produce indirectly) will form part of our work in CP7, so we aim to exit CP7 with carbon neutral operations. To enable this, we intend to work with schemes located in Scotland to develop arrangements for offsetting within the Scottish economy.

We will also roll out a programme to strategically manage invasive non-native species across Scotland to achieve compliance with the legal requirements while promoting a safer, more biodiverse lineside and boost relations with lineside neighbours.

In a challenging financial environment, compromises have been made and our environmental sustainability programme has been adjusted in recognition. As a result, we'll deliver a revised sustainability strategy with more emphasis on funded workstreams and resource-led initiatives.

This approach will bring about progress but will also impact the scope of plans for future control periods. Throughout CP7 we'll continue to seek efficiencies and alternative funding models while using innovative approaches to reduce our impact on the environment and make environmental improvements where appropriate. We'll work closely with stakeholders to collaborate on projects with mutual benefits and embed sustainability into existing delivery mechanisms to further deliver a green, decarbonised, and climate-ready railway for the people of Scotland.

Measuring outcomes

Our ambition to meet net zero targets will be underpinned by a series of environmental sustainability outcome measures that will monitor our carbon emissions and our approach to vegetation management

| Decarbonisation | ↑ | • Encouraging more passengers and businesses to choose rail as part of their sustainable journey.
 • Support the Scottish Government's legal requirement for net zero by 2045. |

The following table and subheadings provide detail on how our delivery against increased biodiversity and net zero ambitions will be measured across CP7.

Table 2.4: Deliver net zero – outcome measures

Measures	CP6 exit forecast	Proposed baseline				
		24/25	25/26	26/27	27/28	28/29
Carbon emissions - scope 1 and 2	-25 %	-29.4 %	-33.6 %	-37.8 %	-42.0 %	-46.2 %
Biodiversity units	N/A	0.5	1	1.5	2	2.5

In CP7, we'll be monitored on two success measures, carbon emissions (scope 1 and 2) and biodiversity units.

- **Carbon emissions:** Decarbonisation will be monitored through our Scope 1 and 2 carbon emissions outcomes, which capture the emissions we directly control from use of fossil fuels and purchased non-traction electricity and heat. In CP7 we aim to improve upon our CP6 exit forecast of a 25 % reduction in Scope 1 and 2 CO_2e emissions against the CP5 exit baseline in 2018/19, reaching a total reduction of 46.2 % by 2028/29 against the same baseline.

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- **Biodiversity units:** This metric captures how the management of our infrastructure will change the biodiversity value of our estate. The baseline was set in 2021/22 and is currently our only data point, as the first year of data is yet to be analysed. Table 2.4 represents an estimated glidepath showing us achieving a 2.5 biodiversity net unit gain by the end of CP7. However, until the data is more established, this is subject to change. Ringfenced biodiversity funding is not included in our plan, so the estimated improvements are based on delivering biodiversity improvement plans by taking opportunities available whilst delivering other infrastructure works, delivering pilot schemes with our lineside teams, and improving invasive non-native species management.

2.5 Run a reliable railway

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Network Rail train performance, Train Operating Company performance, enhanced protection against disruption, competitive journey times	3.7, 3.8, 3.9, 3.10, 3.11, 3.31, 3.32, 3.41 (performance)

As the rail infrastructure owner across Scotland, we recognise we have an important role to play in enabling trains to arrive at their destination safely and reliably. We believe a reliable railway is a safe railway and will continue to focus on managing our network to drive improvements in train performance. Our CP7 plan focuses on an affordability-driven approach to renewals expenditure in CP7. We recognise that there will be an impact on overall asset condition, as we transition our workbank mix from more full renewals to a blend of renewals and life extending interventions. We plan to deliver more maintenance works in CP7 to mitigate this impact as much as we can.

Our regulatory measure for train performance in Scotland is the Public Performance Measure (PPM), which represents the proportion of trains arriving at their final destination 'on time' compared to the number of planned trains. A train is defined as on time by PPM if it arrives at the destination within five minutes of the planned arrival time. It's the output of track and train working together in a whole system approach and requires input from both Scotland's Railway and ScotRail Trains to achieve the target. Section 3.8 looks at how we've performed against this measure over the years and highlights our approach in CP7.

Performance in CP7

During CP7 we'll continue to focus on improvements to rail services by working in partnership with passenger and freight operators, who form an integral part of the rail business in Scotland. We're jointly focused on embedding a culture of continuous performance improvement, working closely with industry partners and stakeholders to improve the experience of rail travel for our customers by reducing journey times, delays

to train services, and supporting key lifeline services to existing far reaching areas of the Scottish network where it is safe to do so, whilst improving reliability by reducing cancellations.

As part of our CP7 plan, Transport Scotland requires that we enable ScotRail Trains to deliver 92.5 % Public Performance Measure (PPM). The HLOS states that a specific derogation will be given from the 92.5 % target due to delays caused by speed restrictions during times of severe weather or to services which have allowed connections to other late running trains or ferries. Agreement will be reached on how to define and name the measure, including derogation, prior to CP7.

One of our primary performance objectives is to enable the delivery of the Public Performance Measure (PPM) during CP7 at levels set following the publication of the HLOS. This is the metric Transport Scotland choose to measure train performance. This remains a very challenging ambition so we must acknowledge we've never delivered that level of performance consistently.

The current CP6 Public Performance Measurement (PPM) exit forecast of 89.8 % (CP6 PPM without the derogation for delays caused by speed restrictions or connections) will make achieving the target extremely difficult in years 1, 2, and 3 of CP7. The scale of this challenge should not be underestimated and requires a whole system approach to performance to be successful, notwithstanding the external challenges that we face, particularly if climate change and extreme weather continue to outpace available investment. Earlier delivery of the performance target would require urgent, sustained and significant investment in the ScotRail Trains rolling stock fleet. Without this investment, there is a 0.4 % gap to achieving 92.5 % PPM. Section 3.8 covers this topic in more detail.

Scottish Ministers require us to enable the operators of the Caledonian Sleeper to meet their Right Time targets in CP7. We commit to working with our industry partners with the aim of sustaining current levels of performance for the Caledonian Sleeper throughout CP7.

Scottish Ministers' HLOS also outlines the requirement to recognise the performance requirements of other operators on the Scottish network. We plan to deliver a Time-to-3 Border Presentation Index (BPI) score of no less than 1.00 in both directions, which is a commitment to sustaining the performance of services northbound from presentation to

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destination and a commitment to deliver cross-border operators to the border within path.

It's important to provide a consistently high level of performance for freight users in CP7. Scottish Ministers require that the network provides capability so that the Freight Cancellations and Lateness (FCaL) measurement for freight trains on Scotland's railway does not exceed 5.5 %. This is a new measure for Scotland's Railway in CP7 and our current CP6 exit forecast (6.08 %) makes achieving this target in year 1 of the control period difficult but we remain committed to developing plans to improve performance for our freight customers.

Measuring outcomes

The reliability of the railway in Scotland will be assessed through a number of measures that track the improvements we aim to make across CP7.

The following table and subheadings provide detail on how reliability will be measured.

Train Service Delivery ↑	- During CP7 we'll continue to focus on improvements to rail services by working in partnership with ScotRail Trains and cross-border operators. - Our plans are focused on improving the reliability of the network and our aspiration is to enable 92.5 % of ScotRail Trains services to arrive at their final destination within five minutes of the timetabled arrival time (PPM), unless disrupted by the impacts of severe weather and delays caused by connections to other train services or ferries. - Scotland's Railway is a system and PPM is the output of track and train working together in a whole system approach. This requires contribution from both Network Rail Scotland and ScotRail Trains to deliver the performance outcomes which are set out by Transport Scotland in its HLOS. - Based on our most recent modelling we expect to deliver this by the end of the fourth year of the funding period. It's important to acknowledge that this remains a very challenging ambition and that we've not consistently delivered this target in recent years. Earlier delivery of the performance target would require urgent, sustained, and significant investment in the ScotRail Trains rolling stock fleet. All modelled trajectories rely on specific investment decisions within Network Rail, ScotRail Trains and in conjunction with Transport Scotland, decisions that have yet to be taken. - Our modelling includes a 0.4 % gap in performance relating to Fleet issues. Improvements for this category are currently

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unfunded and are a fundamental lever in achieving our performance targets set out by Scottish Ministers in CP7.
- Our plans also aim to allow our cross-border operators to meet their Border Presentation Index targets, Caledonian Sleeper to deliver their Right Time target and achieving a Freight Cancellations and Lateness target of no greater than 5.5%.
- We'll aim to achieve this by reducing the impact of extreme weather-related events; managing external events such as trespass, fatalities, and route crime and reducing conflicts through delivering improvements to the timetable planning process.

Asset Sustainability ↓

- We're planning to transition our workbank mix from more full renewals to a blend of full renewals and life extending interventions in order to reduce costs in the next five-year period. This is expected to result in the risk of a deterioration in some asset condition, or average remaining life. But we believe that this can be mitigated through applying more targeted refurbishment and maintenance interventions, underpinned by our market-led approach.

Table 2.6: Run a reliable railway – outcome measures

Measures	CP6 exit forecast	Proposed baseline				
		24/25	25/26	26/27	27/28	28/29
ScotRail Trains public performance measure	89.80%	91.02%	91.54%	91.91%	92.50%	92.50%
On Time	66.75%	67.36%	67.50%	67.60%	67.80%	68.00%
Passenger Cancellations	3.40%	3.30%	3.20%	3.10%	3.00%	3.00%
Service affecting failures	1,821	1,833	1,845	1,858	1,871	1,885
Composite sustainability index	3.25%	-	-	-	-	-0.10%
Composite reliability index	29%	-0.8%	-1.4%	-2.1%	-2.8%	-3.5%
Freight Cancellation and Lateness (FCaL)	6.08%	6.00%	5.70%	5.50%	5.50%	5.50%

In table 2.6, CP6 PPM is as traditionally defined and the CP7 PPM trajectory includes a derogation for severe weather and connections to other train and ferry services as defined in the HLOS. The name for the CP7 measure has yet to be confirmed. CP7 PPM is based on the medium trajectory outlined in section 3.8.

In CP7, our ambition to run a reliable railway will be monitored through a series of outcome measures noted below:

- **ScotRail Trains public performance measure:** Our train service delivery performance will be monitored by Scotland's Railway and ORR as specified by

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Transport Scotland through the public performance measure, which scores train punctuality according to their minutes of lateness and cancellations against schedule.

Our current public performance measure CP6 exit forecast is 89.8 %. This is subject to many variables as noted above and will continue to be monitored. Our CP7 forecasts have been developed in an unusually challenging environment, with continued uncertainty about levels of demand and service provision, and difficulty understanding the underlying performance trends given the impact of industrial action. On this basis we have built our CP7 plans around a number of key assumptions (see Annex 1).

- **On Time:** ORR has proposed to use On Time as its train performance success measure in CP7. This measure tracks the percentage of recorded station stops arrived at early or less than one minute after the scheduled arrival time.

ORR have stated their intention to use On Time as the regulatory benchmark for schedule 8 purposes. It is important to note that on time can drive different operational decisions to PPM when it comes to train performance. Specifically, this measure conflicts with Scottish Ministers' requirement to hold trains for connections to other train services or ferries.

- **Passenger cancellations:** We'll also be monitored by ORR through the passenger cancellations metric. This measure tracks the percentage of planned trains which either didn't run their full planned journey or did not call at all their planned station stops. The measure is a score which weights full cancellations as one and part cancellations as half. Our CP6 exit forecast of 3.40 % is projected to decrease to 3.00 % by 2027/28.

- **Service affecting failures:** We'll track the impact of asset failures on train performance through the service affecting failures measure. We've excluded telecoms from this measure. Service affecting failures are linked to public performance measure attainment, so any changes in the performance baselines will influence service affecting failures baselines. Our CP6 exit forecast is based upon a 3.5 % uplift from the Year 4 CP6 forecast.

- **Composite sustainability index:** ORR will monitor asset sustainability through the composite sustainability index (CSI) metric. This metric captures the

percentage change of asset sustainability compared to the end of CP4, measured either by remaining life of the asset or by asset condition score, weighted by the replacement value of the asset.

- **Composite reliability index:** The composite reliability index (CRI) metric will support ORR in monitoring asset performance. This measures asset reliability across the network. Noting that the baseline is reset to 0 % at the end of CP6, we forecast that our CP7 composite reliability index may decrease to -3.5 % by 2028/29. To mitigate, we're developing plans to limit the impact. These include targeting reliability works (via funding assigned to the Asset Improvement Programme), applying additional maintenance interventions, harnessing technology (such as remote condition monitoring) and utilising data to better shape performance-led interventions.

- **Freight Cancellations and Lateness (FCaL):** For freight services, we'll be monitored by ORR through our freight cancellations and lateness measure as specified by Transport Scotland. This captures the percentage of commercial freight services in Scotland that are cancelled or are 15 minutes or more late as a result of the infrastructure manager or another operator that is not a commercial freight operator. We project that our FCaL metric will improve to 5.50 % by 2026/27 from our CP6 exit forecast of 6.08 %.

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2.6 Track and train working together

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Timetabling, improved journey times, equality duties, customer satisfaction, freight	3.4 (equality), 3.15, 3.16, 3.17, 3.19 (satisfaction), 3.24 (supporting freight, average speed of freight trains, freight growth), 3.25, 3.26 (freight growth targets, freight growth strategy)

Note that this section also addresses our accessibility obligations as set out in items 7, 9, 10 and 24 of the Secretary of State for Transport's HLOS requirements.

Collaborating with passenger operators

From 1 April 2022, passenger train services transferred from the franchised operator (Abellio) to the responsibility of Scottish Government and operate under the identity of ScotRail Trains. This change supports greater track and train collaboration to further focus delivery on the passenger, drive performance improvement and change the culture of how we operate our railway. This is achieved through a joint performance strategy, of which both track and train are responsible for delivering in the remainder of CP6 and beyond into CP7.

To further understand the communities we serve and to enhance our offering, we've defined six **'Customer Experience Pillars'** which identify the considerations we and our train and freight operators must make when making decisions about Scotland's Railway. They are:

- Data and insight intelligence
- Satisfaction metric (the successor to National Rail Passenger Survey)
- Passenger and customer-led design
- Delivery of excellent service

- Customer focused leadership
- Aligned business partner strategies.

These will allow us to develop a better understanding of who our passengers and future passengers are, better recognise their priorities, needs and requirements through the delivery of our passenger profiles, insight framework and satisfaction metric, and enable us to inform strategic and disruptive planning events. In turn, this will strengthen our understanding of the associated financial considerations across the profiles so that opportunities are identified to encourage modal shift.

In CP6, we launched our Customer Service Academy, a bespoke customer service development programme in conjunction with ScotRail Trains which will act as a cultural change catalyst to support the development of our people and future leaders throughout CP7.

Managed Stations

Our **managed stations** are a key and vital part of our customer journey and throughout CP6 we have seen investment in our stations, bringing benefits and changes which will carry on into CP7 and beyond. During CP7, we want to create spaces at stations that reflect the needs of the customers using them and make it easier and less stressful for passengers whilst getting them where they need to be. To help make this a reality, our CP7 plans include:

- **Turn Up and Go passenger assistance.** Through continued staff training and improved processes, including collaboration with operators, we've committed to providing 'turn-up-and-go' passenger assistance, a service available for passengers who need assistance and have not booked in advance, available at all of our managed stations.

- **Toilet refurbishments.** The toilets at Edinburgh Waverley and Glasgow Central will be subject to material enhancements to improve the ambience and atmosphere for our passengers. This will include undertaking a full passenger survey so that individual and bespoke refurbishments are focused on passenger needs and demands. This will mean that our facilities improve accessibility and ease of access for all passengers.

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- **Wayfinding at our stations.** Wayfinding is reviewed regularly so passengers can find their way around quickly and safely. Based on feedback, we're changing signage at some stations in CP7.

- **Maintaining clean stations.** This will be achieved through our well-established auditing process.

- **Continuing to integrate station teams with operators**. This will provide customers with a better, more consistent service at our stations as well as efficiencies through alignment of teams.

- **Electric vehicle (EV) charging points.** EV charging points have been installed already at some managed stations and we'll identify further opportunities at other stations throughout CP7.

We'll design and deliver a managed station operating model which focuses on cost, efficiencies, and service for both Scotland's Railway and Train Operating Companies throughout CP7.

Accessibility

Scotland's Railway is developing an Accessibility Strategy that considers the passenger rail experience with the goal of eliminating barriers within and around stations to unlock the rail network for more people. The strategy provides a holistic passenger-centred definition of accessibility rather than the historic infrastructure-centred definition.

The passenger experience has been visualised by the four pillars of accessibility (figure 2.2). The pillars identify how the railway can enable everyone, including the 32 % of adults and 10 % of children in Scotland estimated to be disabled and the 30 % of Scottish residents without cars, can navigate from their origin to their destination and back with a feeling of confidence and security. You can find out more about national disability statistics on the 'Scotland's wellbeing: national outcomes for disabled people' page on the Scottish Government website and you can find out more about Scottish transport statistics on the 'Scottish Transport Statistics No 35: 2016 Edition' page on the Transport Scotland webpage.

Figure 2.2: The four pillars of accessibility
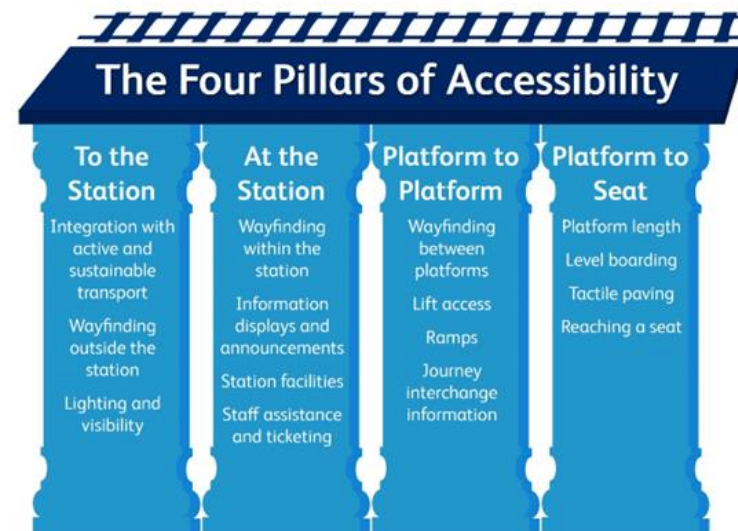
The strategy is a framework through which all station investment (for either existing or new stations) will be viewed, considering each element of the passenger journey. Our draft strategy is currently being consulted with our stakeholders across Scotland.

We'll design all new station schemes, including renewals, to be fully compliant with the Department for Transport (DfT) Design of Accessible Stations Code of Practice (and other relevant accessibility requirements), and meet tactile edging and other mandated accessibility requirements. Designing our asset interventions with accessibility in mind helps to make our stations and facilities more accessible and enables our legal compliance with mandatory design standards and our public sector duty under the Equality Act 2010. Accessibility by design will be supported by our new and improved Diversity Impact Assessment standard.

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Collaborating with the freight industry

Rail freight has been proven to be a reliable and sustainable logistics solution and, with goods transported by road accounting for a quarter of Scotland's transport emissions, it's vital more goods are moved by rail for Scotland to achieve net zero targets. We'll continue to work proactively with the rail freight sector and businesses in Scotland to achieve this goal.

The rail freight market is recovering from the pandemic and global economic challenges, and growth is projected to continue. Scotland's Railway must continue to flex and adapt its offering to encourage more businesses to choose rail as part of a journey.

In CP7, in collaboration with the freight sector, we aim to increase net tonne kilometres by 8.7%, facilitated through the CP7 funding settlement. We believe that there is a potential we could deliver more than 8.7% growth, but this is subject to robust business cases being produced to secure enhancements funding and/or timetable trade-offs. Recognising freight sector concerns that a net tonne kilometre metric does not accurately reflect growth in some newer markets, such as express freight, we'll also use metrics such as number of trains and product lifted to inform our requirements for freight growth on the rail network.

We'll continue our collaborative work with the freight sector to develop a longer-term rail freight joint industry growth strategy during CP7 that will be focused on the strategic themes of efficiency, growth, sustainability and reliability. Our industry groups, such as the Freight Joint Board and Freight Sustainability Group, will strengthen our understanding of the logistics sector's requirements for rail freight growth.

Industry-wide collaboration

Scottish Ministers require us to improve how we develop and deliver our timetable for our customers. We'll work with train and freight operators in Scotland, in conjunction with our Network Rail System Operator colleagues, to develop proposals that deliver more efficient and integrated timetabling for Scotland.

Scottish Ministers' HLOS outlines several requirements for improving journey times in Scotland. The first requirement is to decrease the average minutes per mile measured across all ScotRail Trains services in the current timetable. The second requirement is to improve journey time for Inter7City services based on a 'mile a minute' target by 2030.

The HLOS also requires the delivery of an increase in the average speed of freight trains. Scotland's Railway, in conjunction with industry partners, will provide a plan by the beginning of CP7 to achieve these requirements. These journey time improvements will be achieved by enabling alignment between track and train working both within Scotland's Railway and with passenger and freight operators. Improvements in journey time and average speed will be achieved through opportunities such as identifying line speed increases which can be linked to planned renewals, reviewing and aligning timetables and train capability, and evidenced market-led decision-making enabling delivery of the best outcomes for our customers. The plans will be developed with industry working groups, which will include representatives from across the rail industry in Scotland.

Measuring outcomes

We understand the value of track and train working in a more integrated fashion together and it's a key enabler for delivering the best railway Scotland's ever had. This section sets out some of the initiatives that we're undertaking with train and freight operators in order to deliver our outcomes.

Whole Industry Profit and Loss	↑	• A series of performance indicators to be agreed with Transport Scotland and train and freight operating companies that will allow us to measure how successful we are at both helping to increase revenues and to reduce the net cost of the railway overall
Collaboration with Train and Freight Operating Companies	↑	• We'll continue to work closely and collaboratively with train and freight operators to identify opportunities for further efficiencies • We're also working closely with train and freight operators to improve reliability of services through our performance improvement plan
Customer Experience Pillars	↑	• We'll continue our focus on improving customer experience

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		• We've defined six customer experience pillars which will contribute to the delivery of excellent service to our customers and communities • These include data and insight intelligence, satisfaction metric, passenger-led design, delivery of excellent service, customer-focused leadership and aligned business partner strategies
Freight Market Share	↑	• We'll continue our focus on working collaboratively with the freight sector and businesses to strengthen our understanding of the logistics sectors requirements for modal shift to rail
Freight Capacity	↑	• Continuing to work collaboratively with the rail freight sector and businesses in Scotland to increase rails market share for the movement of goods • We'll encourage more businesses to choose to move their goods via rail, demonstrating the reliability and sustainability benefits of rail freight in order to secure a freight growth increase across CP7

Our ambition to have track and train work together in CP7 will be measured by ORR through three outcome measures as follows:

- **Passenger satisfaction:** Passenger satisfaction is a survey-based metric that captures the percentage of customers who were satisfied with their overall journey. From a CP6 exit value of 7.98, we forecast this metric will increase to 8.07 by 2028/29

- **Managed stations satisfaction:** Managed stations satisfaction is a survey-based metric that captures the percentage of customers who were satisfied with their experience at managed stations. From a CP6 exit value of 69.3%, we forecast this metric will increase to 70.8% by 2028/29

- **Freight growth (net tonne kilometres):** The freight growth metric measures the amount of freight moved on the railway network, taking into account the weight of the load and the distance carried. From a CP6 exit forecast of 7.5% growth on the CP6 baseline, we forecast that we'll reach the HLOS target of 8.7% growth on the CP7 baseline by 2027/28

Table 2.7: Track and train working together – outcome measures

Measures	CP6 exit forecast	Proposed baseline				
		24/25	25/26	26/27	27/28	28/29
Passenger satisfaction	8.03	-	-	-	-	8.07
Managed stations satisfaction	70.0%	-	-	-	-	70.8%
Freight growth (net tonne kilometres)	7.5%	3.8%	4.3%	5.7%	8.7%	8.7%

Chapter Three – The components of our plan

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3. The components of our plan

3.1 Introduction

In previous chapters we described both the challenges we face, and also the strength of our ambition. In Chapter 2 we set out our approach to delivering the vision of our funders and our passenger and freight customers.

This chapter sets out how we'll seek to deliver the necessary outputs and outcomes. While there are certain core activities that must be undertaken to run a railway – Operations, Maintenance, Renewals, and Support in both Scotland and from Network Rail as a whole – there are many potential approaches we could take and combinations of these activities we could choose from to determine how we deliver in practice.

Our aim here is to summarise the key choices that we've made, and why we consider that these will best deliver the vision we have, within the funding available. The headline result is value-for-money for our stakeholders. We've had to be strategic about how we balance a desire for long-term optimisation against the funding that is available. And as described elsewhere, we've had to be ambitious about our approach to efficiencies to make that funding go as far as possible. In this chapter we describe some of the key efficiency initiatives as well as how we'll endeavour to deliver targets we've set ourselves for CP7.

The chapter can only be a summary of our analysis, and we provide links to where further information is available.

This chapter covers the following main elements:

- **Our approach to renewal of the railway**. Renewals are critical to keeping our railway in the condition that safely delivers our outputs. There's a tension between replacing assets too late, which risks excessive performance incidents, and replacing assets too early, which leads to spending additional funds ahead of the optimum time. We explain, on an asset-by-asset basis, how we've combined historical insights with our maturing asset management approach to make these important trade-offs.

- **Other capital expenditure**, which covers a range of spend on areas outside the core asset base, for example technology (including IT), safety and security, and environmental sustainability. This spend is important both as an enabler of overall stated outcomes, and for delivering specific outputs in their own right, so it is key that we take a strategic approach.

- **How we'll deliver maintenance activity,** which refers to the range of regular inspection and associated activities that preserve the condition of the operational railway and provide the first line of detection and prevention of faults. These activities are predominantly delivered through our skilled workforce, and we have a number of initiatives that will continue to allow our people to be in the right place at the right time in CP7.

- **Operations,** which refers to the real-time delivery of railway services that keeps trains moving, whilst dealing with the issues that inevitably arise in the best possible way. We'll continue to deliver on promising initiatives from CP6 as well as harnessing the benefits of working more closely with the range of passenger and freight operators so that track and train work together for the benefit of our customers.

- **The important support functions** that help plan, coordinate, and govern the frontline work we do on the railway.

- **The setting of the Scotland share of network-wide, central functions** that allow us to more cost-effectively utilise the scale and insight of Network Rail as a whole to deliver within the unique setting of the devolved Scottish transport landscape. We've worked to make sure the spend adds value in Scotland, is aligned with Scottish Ministers' priorities, that the functions are efficient, and that we've taken a fair share.

- **Our analysis in relation to performance,** which covers an overview of our performance history and our approach to building our performance trajectories. This Strategic Business Plan contains our latest view on our performance analysis. Our performance trajectories have been socialised with ScotRail Trains, Transport Scotland, and ORR. We'll continue to work collaboratively with ScotRail Trains throughout year 5 of CP6 to further develop these plans.

- **Our people strategy** 'You in the Making' sets out our strategic ambition. Our overall vision is to 'create an environment where everyone does their best work to create the best railway Scotland's ever had'.

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- **Components of our overall income**, which includes a range of sources such as direct government grant, access and depot charges, and commercial income. We've worked hard to maximise the commercial potential of the railway and aim to recover from COVID-19 as quickly as possible, as any commercial income reduces the costs that would otherwise be borne by taxpayers and railway users.

- A **range of industry costs and rates that are largely** outside of the control of Scotland's Railway, but nevertheless form part of the overall industry cost-base. These include cumulo rates (i.e., business premises taxes), ORR costs and Railway Safety and Standards Board (RSSB) costs.

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3.2 Approach to renewals

| This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Asset management strategy, support for economic growth, prioritised investment, contracting strategy, OMR planning, Passenger Vehicle Gauge, smart technology and standards	3.43 (whole system approach), 3.43 (support economic growth), 3.43 (contracting strategy), 4.1, 4.6, 4.18, 4.19, 4.22

Asset management overview

To be able to meet customer needs and deliver financial sustainability, our rail infrastructure assets must be safe, reliable, and resilient.

Over the past twenty years we've developed a wealth of experience about the performance of our infrastructure, the faults and incidents that inevitably arise, and how to better predict them. We're harnessing millions of records from inspections to allow us to become more proficient in the management of our assets. This has led to significant improvements in asset performance, more than halving instances of service affecting failures to the current level of less than 2,000 service affecting failures annually, as shown in figure 3.1.

Figure 3.1: Changing pattern of asset performance
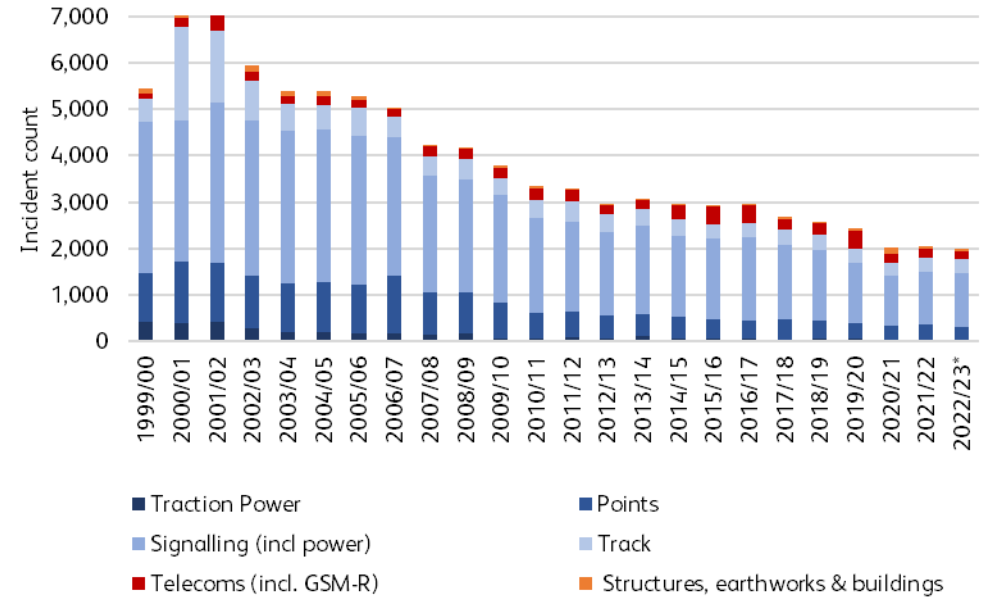
* Forecast

Asset contribution to safety

The Rail Safety and Standards Board publishes insights on the contribution to safety from our infrastructure assets. Figure 3.2 below shows that reductions in train accident risk have been achieved in relation to signals passed at danger and adhesion categories. Most other categories reflect broadly consistent levels of risk in the current control period, with some marginal improvements. The impact of severe weather can be observed, most noticeably, in the trend for earthworks. We'll mitigate train accident risk in CP7 through continuing our structures scour protection programme, prioritising renewals investment in earthworks and drainage, taking steps to prevent road vehicle incursions, and undertaking additional vegetation management activities to mitigate objects on the line.

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Figure 3.2: Infrastructure contribution to train accident risk reduction
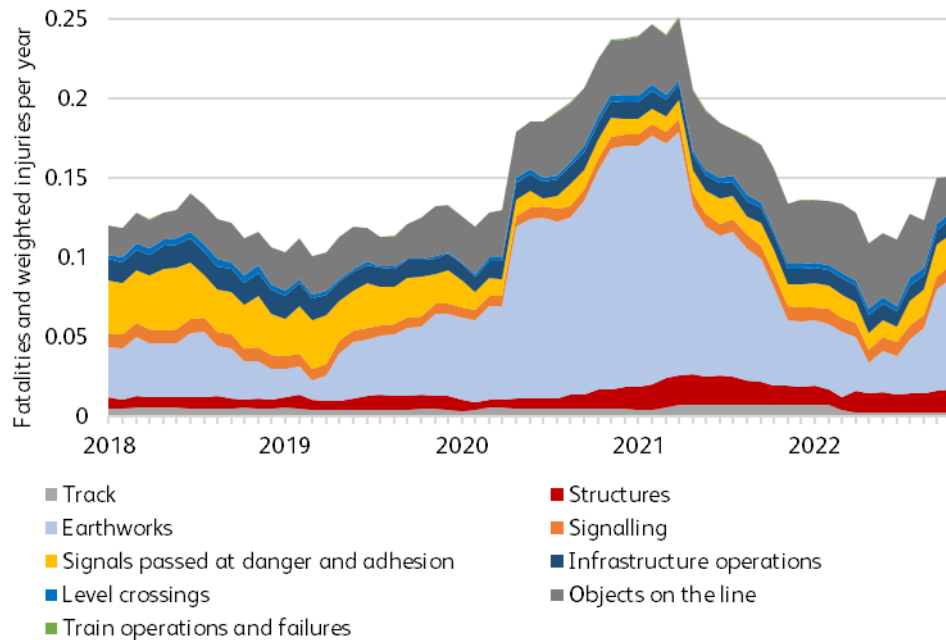
Data collected over the last twenty years has supported our understanding of where renewals are required, whether this be through full replacement or targeted refurbishment and life extensions. This has helped us to refine the basis on which we measure and model asset condition and asset life. Since 2014, we've measured remaining life in an equivalent way across our asset classes through our composite sustainability index (CSI).

CSI is reported on an annual basis and is accompanied with longer term forecasts, as shown by figure 3.3 below. The residual value refers to residual life or asset condition, weighted by the replacement value of the asset baselined to CP4, when the measure was first introduced. This measures the percentage change in residual asset life (noting that we've assessed that in aggregate our assets currently have around 50 % of residual remaining life). After initial work to address data gaps, since 2017 it has become a reliable means to monitor changing asset condition and remaining life.

The CSI forecast to the end of CP7 suggests that the residual asset value of Scotland's Railway will be returned, at a headline level, to the CP4 exit position (when the CSI was introduced). However, some of the increase in early CP5 reflects the inclusion of existing assets that were missing from our asset registers at the end of CP4 (mostly drainage and earthworks) and new infrastructure installed by enhancements schemes. In addition, as per figure 3.3, corrected installation dates for some of the overhead line equipment (OLE) wire runs during CP6 have created an artificial increase of 1.08 % from the declared CSI in the 2021/22 annual return.

Measuring railway asset condition

Changes in asset condition can vary the performance we can achieve from the network. A measurable decline in asset condition increases the potential for risks. Asset condition will change as a result of degradation through use and environmental weathering or improve through our interventions to maintain and renew assets.

During the past decade we've measured important changes in the distribution of remaining asset life. While we've only seen a marginal reduction in average remaining life, we know that more assets are also now closer to life expiry.

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Figure 3.3: Scotland Composite Sustainability Index: historical and future performance
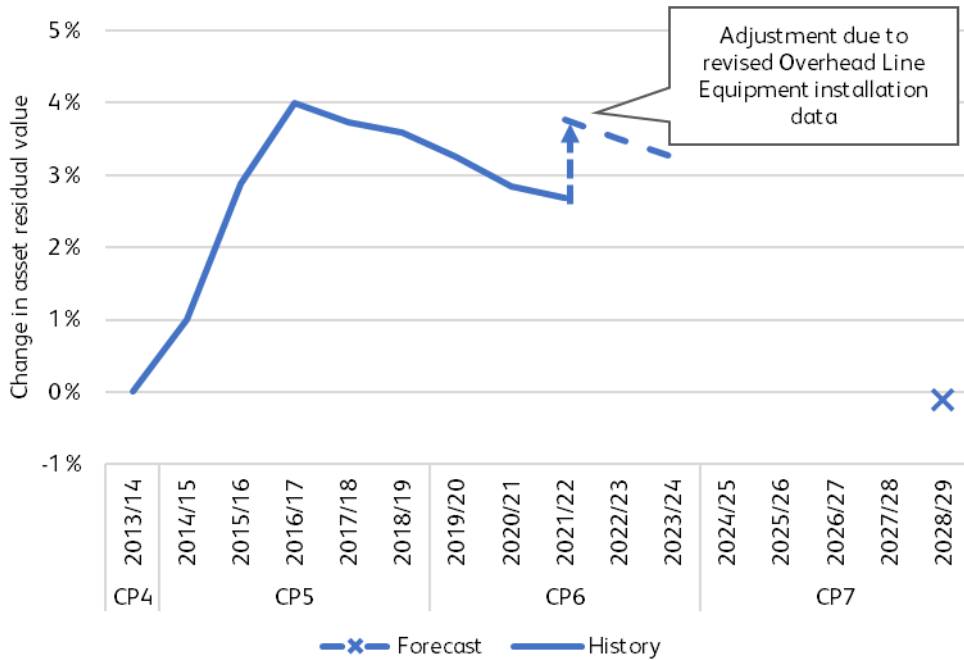
The impact of the railway suffering more frequent and extreme weather events has caused acceleration in rates of asset deterioration (especially for earthworks, drainage, and river and earth retention structures) as well as increased weather-related service impacts. Future weather trends point to periods of prolonged and extreme wet weather, as well as drier summers with less frequent but more intense rainfall. The shrinking and swelling of earthworks beside railway lines, as they dry and are subsequently saturated, accelerates deterioration and puts pressure on drainage systems and other assets (for example retaining walls, structures foundations, and lineside equipment housings).

Approach in CP7

As part of our iterative business plan development, we initially set out to consider what a 'steady state' proposal for asset sustainability may encompass. This involves achieving a sustainable, long-term risk profile and condition of assets across the network while avoiding undeliverable bow waves of activity for future control periods.

Acknowledging the financial challenges facing the industry and wider economy, and the need for our CP7 funding to go further than ever before, we have applied even stronger focus to developing a more cost-conscious plan. This has involved reducing our costs through extraction of additional efficiencies and extending the life of existing assets over CP7. We are seeking to protect safety outcomes and prioritise reliability to provide the most value for our funders and customers. This approach is supported by work that we have done since CP6 where we have continued to update and refine our asset models, building in improved insights. These advances have helped, in particular, to provide more accurate and up-to-date data, in turn informing our planned interventions for CP7 and beyond.

In developing our affordability-driven approach to renewals expenditure in CP7, we recognise that there will be an impact on overall asset condition, as we transition our workbank mix from mostly full renewals to a blend of renewals and life extending interventions. We recognise that this may place increased pressure on future control period funding requirements, however, we are developing tools and processes to allow us to gain better insight and limit the long-term impacts.

Since the HLOS and SoFA were published, we have refined our renewals plan to improve outcomes within the funding available. This has strengthened our risk-based approach to asset management by evaluating the risks inherent in our network (for example safety, performance, environmental). Our approach is maturing through the development of a market-led value framework, aligned to Transport Scotland's priorities and the ambitions for each strategic rail corridor. This has led to better visibility of value across our network and will improve our ability to balance the needs of our infrastructure assets from a stewardship perspective and overall affordability – improving efficiency of delivery.

Building our renewals plans

Our policies direct renewals at high-risk assets that are either worn out, obsolete, or have degraded to a state where safe operation and reliable performance can no longer be

achieved. At renewal, we also look to secure wider benefits such as improved resilience to extreme weather and climate change, carbon reduction, and safer maintainability.

Since our interim Strategic Business Plan submission, we've undertaken a review of investment prioritisation across all asset classes. Whilst this has largely validated the composition of our renewals plan, it has also enabled us to mitigate the most significant safety and performance risks set out in our interim Strategic Business Plan.

Summary of CP7 renewals plans

Core asset renewals form a significant part of our CP7 plan; at £1,947 million they are just under 40 % of the total cost of our Strategic Business Plan (pre-efficient). Core asset renewals cover all renewals excluding 'Other renewals'.

Cross asset prioritisation has resulted in a net increase of £36 million investment in renewals. This includes removal of £60 million of lowest value interventions and introduction of £96 million additional high value interventions to target safety and performance risk. In our interim Strategic Business Plan submission in February 2023, we recognised the need to review our structures plan, which has led to a net increase of £62 million in structures.

A summary of core asset renewals expenditure is provided in figure 3.4, which highlights how spend is being distributed by asset class across strategic corridors with some of the drivers of significant spend explained below.
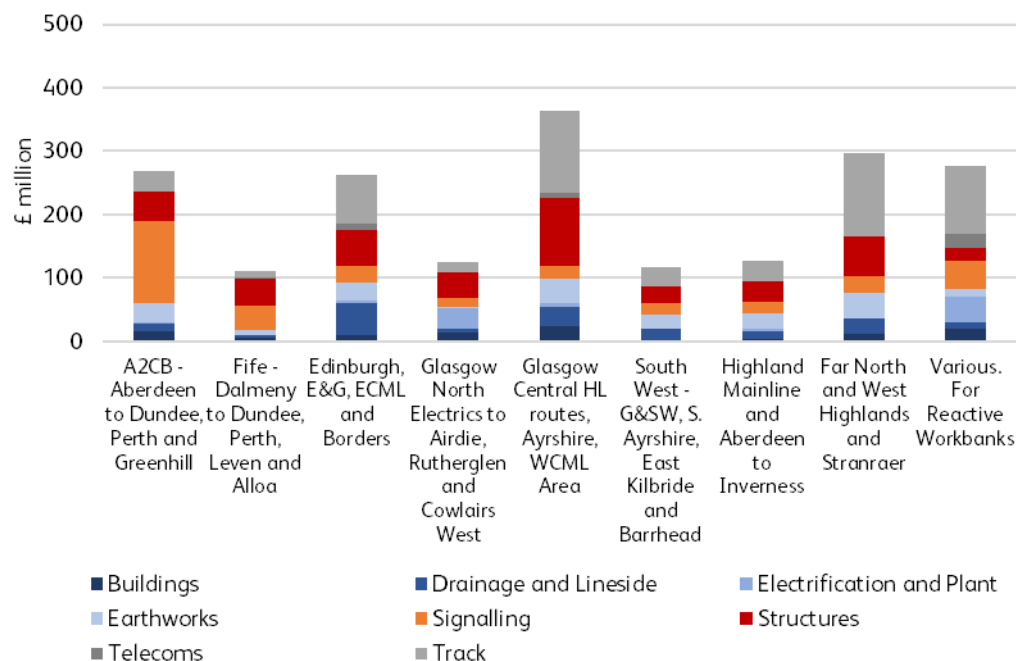
There is £130 million of signalling asset renewals in the Dundee, Aberdeen, Arbroath, and Inverkeilor areas due to life expiry and obsolescence which are contributing to most of the costs along the first corridor. The planned £131 million track spend across the Glasgow Central High Level routes etc. is driven largely by the faster deterioration rate of high-speed, high-tonnage, and high service intensity routes. By contrast, in the Far North etc., £130 million of track investment is needed to address low-speed, low tonnage measures where asset age, types, obsolescence, and historic low levels of renewal have become a significant driver. Structures investment of £109 million in the Glasgow Central High Level routes etc. is partially due to the scale of the corridor, along with the high density of lines and bridges in the Glasgow City area. The various/reactive workbank represents emerging safety risks, investment in areas yet to be specified pending investigation results, and Scotland-wide investment programmes that cannot accurately be disaggregated.

In figure 3.4, whilst the East Coast Main Line and West Coast Main Line are incorporated into a strategic corridor, their significance as cross-border markets are reflected in the corridor criticality that underpins our market-led approach.

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Figure 3.4: Total renewals spend by corridor, £ million (pre-efficient)

Approach to making trade-offs between assets

In making trade-offs across our asset base, renewals investment has been focused on the most vulnerable assets.

As set out in the section above, building on our work in CP6, we've developed better insights around the trends in changing asset state. We've also reviewed activity levels for some assets (in particular, structures, earthworks and drainage assets) in light of the increase in severe weather events over CP6, and their expected continuation in the future.

Our insights have a particular bearing on our civils assets, many of which have not been fully renewed since they were originally built and are expensive to replace, requiring a long-run pattern of increased funding to redress condition. These assets, when towards end of life, can degrade and be particularly vulnerable to extreme weather. This means that we must also focus on associated structures and buildings assets, as well as earthworks and drainage.

We're developing and adopting technology to extend the life of our assets, even when many are approaching, or are at, end of technical life. During the past decade we've undertaken technology development programmes to provide real time insights to our frontline staff, deploying up to date records and intelligence through technology, new visualisation tools, and remote condition monitoring. This technology means that the early onset of problems can be identified and plans to resolve can be implemented in the most effective way. Our ambition for advancement continues through our research, development, and innovation programme.

We also need to manage safety implications from an aging asset base and our interventions in CP7 must reflect this. This is particularly the case for earthworks, where it is difficult to predict where movement or failure may occur, with these assets having been subject to natural weathering processes since the railways were built.

Recognising the challenging financial environment, we've had to make trade-offs with asset renewal demands which, in turn, have implications for asset condition. Our overall approach to each asset, and any trade-offs we've made, is summarised in table 3.1 below. Other renewals are not included in this table. In table 3.1, some of previous Off Track expenditure is now reclassified in track; £57 million of transformational efficiencies are currently allocated to track.

We're developing proposals for remodelling Perth so that it's fit for the future and reduces whole industry cost, linking renewal funding with the proposed decarbonisation programme. It is important to note that Perth re-signalling development will continue for the remainder of CP6 and shall be concluded as part of the line of route signalling development on Aberdeen to Central Belt (A2CB). This will further validate the Perth anticipated final cost which requires particular focus due to the complexity of the existing infrastructure and the expected project staging requirements.

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Table 3.1: Overall CP7 approach to each asset, £ million (post-efficient)

Asset	CP7 expenditure (£ million)	Variance from CP6 (%)	Overview of CP7 approach
Track	523	-36	Life extension, targeted interventions with lower upfront cost.
Drainage and lineside	166	+66	Increased activity on drainage in response to Network Rail Earthworks Review; whole system drainage approach. Focus on lineside, boundary and safe worker access.
Earthworks	218	+20	Implement the whole system earthworks approach.
Structures	429	+10	Recovery of CP6 deferred work; scour damage programme; parapet/spandrel wall stabilisation; culvert renewals.
Buildings	111	-4	Safety related platform, footbridge, canopy and mechanical and electrical interventions.
Signalling	309	-15	Life extension and development of line of route strategies via 'Signalling Scotland's Future'.
Level crossings	36	+13	Realising closure opportunities and delivering condition-based targeted renewals.
Electrification and plant	86	-18	Commencement of Mark 1 Overhead Line Equipment (OLE) renewals programme; condition-based signalling power, fixed plant and distribution renewals.
Telecoms	36	-7	Management of obsolescence; condition-based component renewals.
Total	**1,914**	**-11**	

Planned renewals in CP7 will include line of route-based requirements to deliver Scottish passenger vehicle gauge capabilities (definition to be agreed with Transport Scotland before the end of CP6), except where these will drive disproportionate cost. This will provide the lowest cost approach to removing barriers to the efficient network-wide operation of available rolling stock and will reduce the cross-industry time and cost of vehicle introductions and cascades. The delivery of a Scottish passenger vehicle gauge will therefore proceed using available funding for planned CP7 renewals, the Rail Decarbonisation Action Plan, the Industry Growth Plan for Rail Freight, and the passenger vehicles procurement and deployment strategies, as described in the "Integrated Gauging Strategy" for Scotland's Railway.

Impact on asset performance

While infrastructure failures drive only around 17% of train delays, we acknowledge that there's a potential risk to train performance, particularly in the later years of CP7, but we are planning to mitigate this as outlined further in this section.

Case studies of recent renewal deferrals demonstrate that when continuing to operate life expired assets, some mitigation of the risks to asset performance is achievable. This requires additional management, maintenance, and operational costs resulting from:

- Closer monitoring of changes by additional inspection, monitoring, and analysis: typically costing around 5% of the renewals cost for a single control period deferral

- Holding repairs: costing between 3% and 15% of the renewals cost estimate

- Operational measures, including emergency speed restrictions and increased service affecting failures of between 15% and 60%, when compared with mid-life asset performance. We recognise the scale of this range, but our analysis reflects that the level of impact is heavily dependent on the type of asset, its age, and condition at the point of deferral. Our plan includes targeted interventions that aim to mitigate the potential impacts on our customers and workforce.

The above insights are drawn from network-wide case studies from across Great Britain but are applicable to Scotland's Railway as a constituent part of the GB rail network.

Our modelling insights predict that, based solely on the proposed renewals investment levels, there could be around a 7% increase in service affecting failures by the final year

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of CP7, in comparison with the final year of CP6. In mitigation, we've included a number of critical programmes for CP7, such as: asset improvement plan funding (£16 million), holding works to mitigate the affordability-driven renewals approach (£35 million), associated technology improvements, and plans to better harness our data to shape targeted performance-led interventions. Considering these mitigations, we anticipate a potential risk of up to 3 % net increase of service affecting failures comparing the final year of CP6 with the final year of CP7. This marginal increase in failures is accounted for across our plan and is recognised as a component part of our trajectory to improve the public performance measure in CP7.

Long-term impact of renewals plans

The impacts described above have enabled us to build calibrated models that simulate changes in remaining life for each asset class, as well as indicating the proportion of assets requiring attention during CP7. These models are used to forecast changes in the composite sustainability index and to advise on renewal volumes over the next 35 years.

These models undergo continuous improvement, including annual recalibration to the latest condition surveys, and average delivery costs. We provide updated forecasts of the impact on future renewals plans and confirm an underlying rate of aging equivalent per year. The models have varying levels of maturity and provide confidence at a total network level rather than an individual intervention level. These models were independently assessed in 2014 and 2020, and on both occasions the models were assessed as valid, well calibrated, and applying a best practice approach.

Using these models, and based on core asset renewals in CP7, we've been able to analyse the funding profiles and modelled output on the CSI up to CP13. In modelling these profiles, we've needed to make assumptions around activity in CP8 and beyond. This includes acceptance that we'll not return to CP6 exit levels of asset sustainability in the near future due to the cost and deliverability challenges associated with the volumes of activity that would be required to close the gap. However, mitigation through increased maintenance activity, as well as improved management through technological advancements, will be prioritised.

There will be choices about whether to accept the downturn in asset condition / remaining life (measured through the CSI) in CP8 and beyond, or whether we wish to progressively deliver volumes of work geared towards improving asset sustainability.

These decisions will be highly dependent on the funding and deliverability context at the time.

To redress asset condition in CP8 and beyond, we consider that it may take two control periods to achieve this (CP8 and CP9), as indicated in figure 3.5. Assuming we take this action, the long-run renewals demand to CP13 is set out in figure 3.5 and may require around £2,260 million in CP8 and £2,503 million in CP9, growth of £313 million and £556 million from CP7 funds respectively. By doing this we expect to achieve a stasis position from CP9 where we hold the profile of remaining life in our assets.

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Figure 3.5: CP7 renewals plan and long-term expenditure, £ million (pre-efficient)

Figure 3.6: Long-term CSI impact
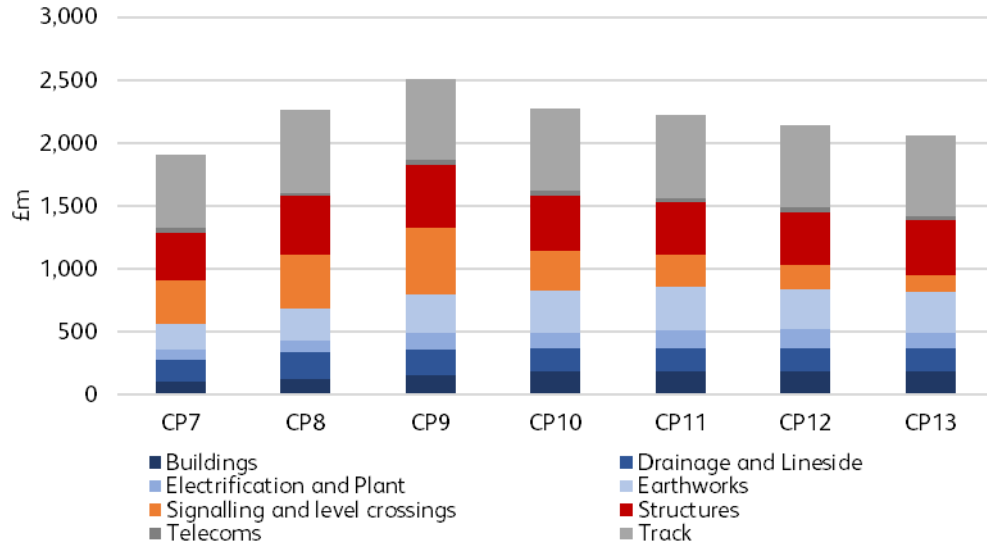
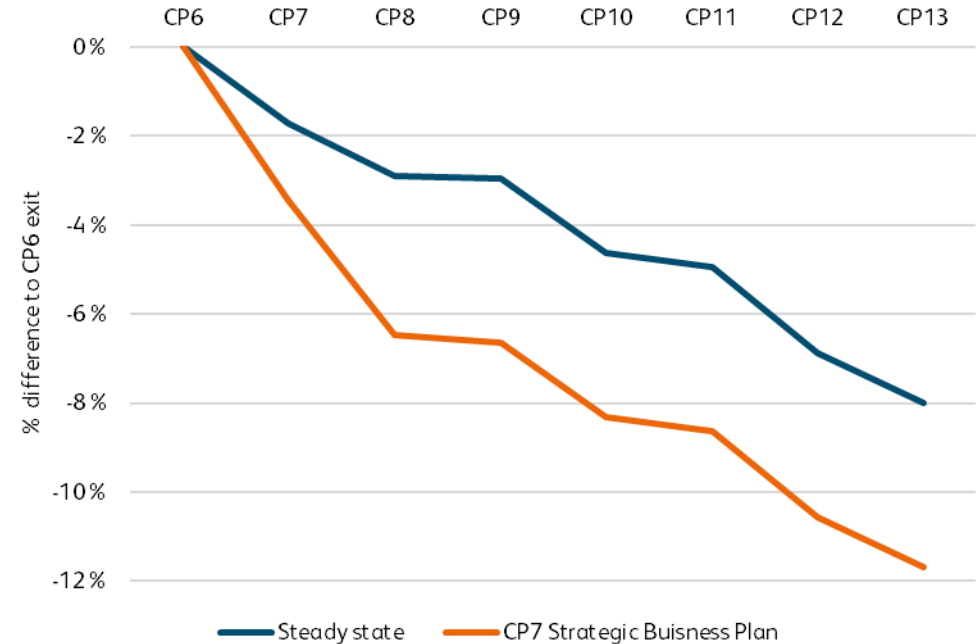The forecast changes in asset remaining life, as shown in figure 3.6, reflect the impact to asset sustainability in future control periods due to the level of renewals investment in CP7. These changes are calibrated to today's operating environment, meaning that acceleration in the loss of life due to more aggressive future climates (greater than we are currently experiencing) has not been factored in.

The forecast continues the pattern of aging broadly equivalent to that seen today, increasing the portion of the asset base in a poor condition. This presents a risk to long-run asset performance which will require greater mitigation through strategic planning and effective prioritisation of investment.

Our forecasts predict loss of remaining life in CP7 and CP8 (orange) which is then maintained, in line with the steady state scenario (blue), from CP9 onwards. Note: the steady state scenario does not maintain the CSI. For most asset classes, this means maintaining the current outputs.

In some asset classes the impact of an affordability driven approach to renewals expenditure in CP7 will only be material from CP8 onwards. Holding works which are sufficient to mitigate a downturn in full renewals activity in the short term will not be able to sustain asset performance in the long-run, and greater levels of activity will be required in the future to address increases in asset failure risk. Recognising this potential for increased investment in future control periods, we'll continue to develop our tools and insights to effectively prioritise – and limit the need for – capital investment.

Efficiencies

Scotland's Railway has achieved significant progress in CP6 through changing the way we do things to respond to the challenging financial environment exacerbated by the COVID-19 pandemic, significant weather events, high inflation, and industrial action. We've focused on building in cost reductions and have already locked in significant reductions to the CP6 exit rates that will, in many cases, form the basis of the CP7 plan. Notable areas of focus in CP6 have been included:

- Standardisation and repeatable design: focusing on removing duplication of activities and decreasing touch points between Scotland's Railway and our supply chain, during project scoping and delivery

- Deepening industry collaboration including establishing strategic partnerships and enabling our supply chain specialists to further influence project outcomes

- Greater use of digital engineering with a focus on technology and innovation

- Leveraging synergies across renewals and enhancements through combining continuous improvement workstreams

- 'Pound in the Ground': Cost transparency and addressing the balance of spend between direct and indirect costs

- Bundling of work to leverage economies of scale.

CP7 delivery approach

We welcome continued support from the Scottish Government in providing clear and stable priorities. Continuing to make early investment decisions allows us to develop a forward-looking and robust plan and lets us put a continued focus on improved pipeline visibility and supporting supply chain investment in skills and equipment to improve productivity, enhance and sustain capability, and boost economic growth in Scotland.

Our Contracting Strategy focuses on embedding longer term Strategic Partnerships with key suppliers, as well as focusing on areas where we can deliver more efficiently by developing our in-house delivery capability. It's also underpinned by the need to bring the best people in the industry together to work collaboratively and flexibly and retain a

sustainable supply chain base in Scotland. Our CP7 procurement exercise will support this by encouraging use of the wider Scotland based supply chain partners to reduce purchase and transportation costs, actively reduce our carbon footprint, support skills development, and support the circular economy in Scotland.

Getting our longer-term planning right will be a key enabler for CP7, and our Integrated Planning Office (IPO) will address the requirements for disruptive access in a 3-to-7-year horizon, and work across delivery and asset teams to plan corridor investments to produce realistic phasing of volumes across the control period to smooth the workbank and avoid the peaks and troughs of demand that drive inefficiency and uncertainty in the job market.

Our IPO forms part of a focused Access Development Programme (ADP) that comprises representatives from our access planning and customer teams, and the programme will define the process by which disruptive access is assessed and proposals made to industry on the optimum solution to be deployed. This programme will focus on earlier understanding of the impacts on passengers and freight customers throughout the planning process and take a 'whole system' approach to planning. This will enable the alignment of delivery programmes to drive efficient costs and consider the wider impacts on stakeholders.

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3.3 Renewals by asset class
3.3.1 Track asset class strategy

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Structural clearance	4.17

Our strategy for track assets will prioritise maintaining safety of the line and asset reliability to reduce renewals costs, in recognition of the challenging financial environment. The strategy leverages our successful historic delivery and aims to extend asset life through targeted refurbishment and renewal activity, with the scope of our work becoming tailored towards addressing key engineering or performance drivers.

Our workbank for CP7 has been derived principally from a prioritisation of engineering need (condition, maintainability, obsolescence) which has then been modelled against route section criticality (performance, strategic importance, speeds, and tonnages). The key pillars of our approach are outlined below:

- Maintaining safety and performance, whilst reducing costs through prioritisation of scope/volume that's not delivering significant safety or performance benefits in addition to driving efficiencies via our supply chain partners
- Focusing on selective replacement of system components that are the initial driver for renewal
- Maximising the service life of assets through life extension activities.

Alignment to operations, maintenance, and enhancements

Alignment of renewals and maintenance is a critical element of our plan. In order to compliment the renewals strategy, we're focusing our maintenance interventions to maintain outputs and taking a corridor view. We acknowledge that our renewals plan doesn't target ballast work as a priority, and we're accepting an overall reduction in

remaining asset life and so we're planning an increase in maintenance activities and will manage ballast through deployment of on-track machine interventions (tamping and stone blowing).

In terms of alignment with enhancements, plain line and switches and crossings (S and C) work will continue to be assessed for opportunities that make improvements in line with the strategic corridor approach.

Innovation and technology enablers

We'll continue to increase our use of composite sleepers and longitudinal timbers within renewal sites to extend the life of the track system. We're increasing plain line pattern recognition (PLPR) coverage, forming part of our support for increased use of risk-based maintenance. This also supports our general move towards a predictive, rather than reactive, maintenance regime. We'll be able to do this by increasing our use of remote condition monitoring systems and data tools.

Headline financials and outcomes

In facing trade-offs, due to financial challenges, we've developed an affordability-driven approach to renewals expenditure, which will transition our workbank mix from more full renewals to a blend of renewals and life extending interventions. We'll focus our activities on the highest safety and performance priorities to reduce costs in the next five-year period, resulting in an impact on overall asset condition.

Due to the predicted reduction in overall condition, we're planning additional mitigations to manage associated risk from potential asset failures, which can have significant impact on train service delivery. These include inspections and monitoring and workbank prioritisation.

Updates since interim Strategic Business Plan

The review of track renewals workbank as part of the cross-asset prioritisation identified £20 million of investment in track related assets which could be revised without impacting the overall outcomes of the plan. Therefore, the plan has been reduced by £20 million, primarily across non-volume interventions, to accommodate additional investment in environmental resilience, structures and electrification, and plant asset

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classes. There's also been a rebalancing between switches and crossings refurbishments and plain line refurbishment to maintain performance and manage safety risk.

In table 3.2 below, the CP6 delivery plan figure includes some off track expenditure that is now classified under lineside. In the Strategic Business Plan figure, £57 million of transformational efficiencies are currently allocated to track.

Table 3.2: Track – headline financial position, £ million

Headline summary	£ million
CP6 delivery plan 2019 (DP19)	847
CP6 exit forecast position	822
Initial submission	682
Interim Strategic Business Plan (pre-efficient)	588
Strategic Business Plan (pre-efficient)	568
Interim Strategic Business Plan	600
Strategic Business Plan	523

As shown in figure 3.7, by using our market-led approach, we're distributing our investment across the network to manage asset specific risks. By transitioning from a full renewal focused plan towards more life extension activities, we'll prioritise maintaining safety of the line and asset performance while reducing the cost of our renewals plan. The geographical corridor breakdown highlights that within CP7 we're addressing track infrastructure safety and performance risks at opposite ends of a spectrum. The risks driven by the faster deterioration rate of high-speed, high-tonnage, and high service intensity routes and the risks driven by low-speed, low tonnage – where asset age, types, obsolescence, and historic low levels of renewal become significant drivers. On the Glasgow and South West corridor there's a relatively low level of investment planned as we've had significant investment in this area in previous control periods.

Figure 3.7: Track – total spend by corridor, £ million (pre-efficient)

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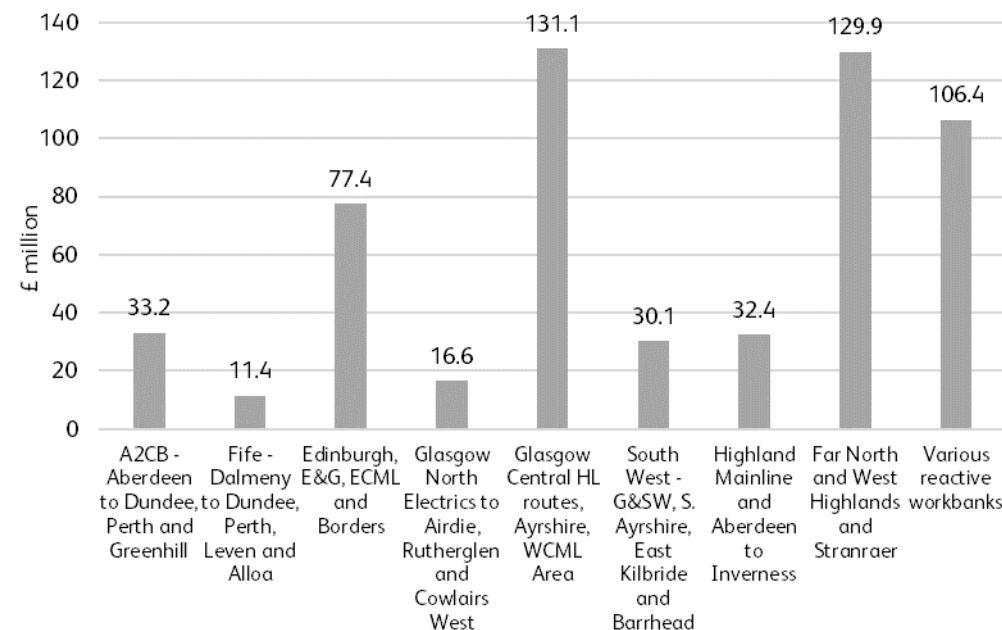
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Key Risks and Challenges

Figure 3.8: Track – risk and mitigation

| Asset	Key Risk	Risk Description and Mitigation
Plain line	Volume of renewals	Despite our consistent reduction in service affecting failures over the past control periods, a marginal increase in CP7 is modelled due to the volume of renewals. To mitigate, we'll target renewals to address key safety and performance risks and align our maintenance plans to manage risks that are not treated by renewals activities. We're planning to deliver additional maintenance activities in CP7.
Switches and crossings	Age and performance of assets	Perth Station has aged and poor performing assets, obsolete Electrical Pneumatic (EP) points, a number of redundant assets and an overly complex layout. We're developing proposals for remodelling Perth so that it's fit for the future and reduces whole industry cost, linking renewal funding with the proposed decarbonisation programme.
Switches and crossings and plain line	Supply Chain	Work is currently ongoing to shape our delivery model and enable efficient implementation. This considers the changes in access strategy, availability and lead time of materials, and labour resources for working in remote areas (especially in Far North).
Switches and crossings	Access pattern change	During the control period there's a change in strategy for historic disruptive access opportunities. We would seek early stakeholder engagement to understand the impact of any strategic change and possible mitigations.

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Historical performance

We've a track record in successfully decreasing the number of service affecting failures in recent control periods. Moving from an annual average of 488 in CP3, to 391 in CP4, to 332 in CP5, and 290 in CP6 (years 1 to 3 only).

In CP7, through our refurbishment strategy, our focus is to maintain and operate the service affecting failures, in-line with the forecasts, within the same limits of the data in figure 3.9.

Figure 3.9: Track – historical performance – service affecting failures (SAF)

* Periods 1-11 only
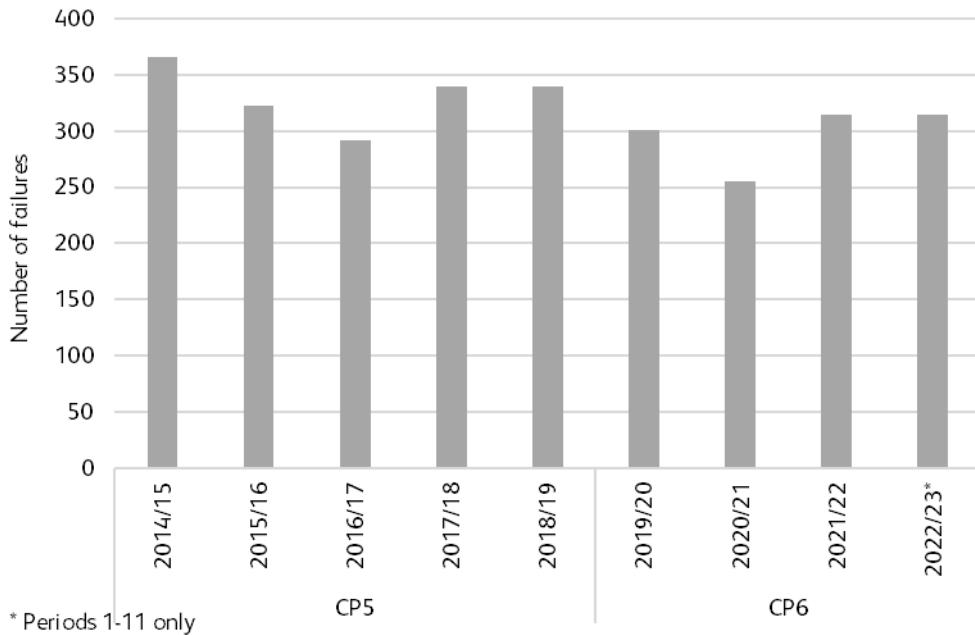
Long term asset challenges

Track assets are expected to make an -0.6 % overall contribution towards our overall CSI in CP7.

There are a number of areas that present long-term asset challenges. These are:

- **Longitudinal timbers**: there's been a significant step change in the management of these assets within CP6, including the development of new standards, guidance, and inspection processes. Additionally, the use of micro drilling techniques has provided a much more robust method of assessing the priority for replacement such that for CP7 there's already a defined bottom-up plan of works

- **Switches and crossings – modular bearer joints**: we'll continue to support the investigation into the cause of modular bearer joint failures and the trial of new and retrofit alternatives. Additionally, for CP7 we'll be developing Scotland specific controls (in additional to nationally provided) to provide sufficient assurance and challenge at the point of modular bearer specification

- **Pre-1979 rail sections**: there are 147.7 track miles of pre-1976 Rail remaining in track categories 1 and 2. The inclusion of rails in the 1976-1978 bracket increases this by a further 22.1 track miles to a total of 169.9 track miles. Re-railing works in CP7 will prioritise the 35.8 track miles remaining in track category 1

- **Failure modes in slab track**: Scotland's Railway has just under 18 miles of slab track asset predominantly located in tunnels in the core east-west routes through both Glasgow Central and Glasgow Queen Street stations. They're operationally critical assets with a high intensity train service. Much of this slab track asset was installed as part of electrification in the late 1970's. We've developed a slab track strategy that outlines our steps towards understanding a level of risk and the solutions and mitigations that need to be applied.

Delivery

Our delivery model

CP7 will commence by using the same integrated and collaborative delivery model as CP6 which will see our Capital Delivery and Works Delivery teams being utilised for the renewals and refurbishment workbank. At present the delivery model is under review, which includes a review of the workbank allocation; the aim of which is to increase sharing of resources such as labour and key plant to drive efficiency.

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Delivery risks

- The impact of inflation, trending above CPI (for steel/energy/aggregates/etc.), is difficult to control and we acknowledge that this has been a key cost driver during CP6. Should this trend continue into CP7, there will be further assessment required to validate the level of work that can be undertaken for the level of funding

- The renewals programme is adversely affected by changes to the pipeline of enhancement delivery projects. This risk may include access clashes, logistical clashes (engineering trains), and contractor resource availability/underutilisation. These potential risks will be mitigated by continual early-stage integration with enhancements pipeline

- Loss of capacity and knowledge to deliver a renewals portfolio of work and ability to respond to emergency works and deliver enhancement works. To mitigate this, we've initiated improving our early stage integration of our renewals to enhancement works over the control period

- Work on the Far North route may be impacted due to resource availability north of Perth and a reliance on additional support from the local maintenance delivery unit. There's an ongoing engagement with ScotRail to allow for longer access periods to the railway, further deriving efficiency and mitigating the impact of resource availability

- The availability of the tamping fleet may be affected during CP7 due to these assets requiring significant refurbishment or replacement due to their age. Non-availability of tampers would decrease the ability to have concurrent worksites and maintenance activities at the same time. Mitigations will be via requests to other routes to utilise any spare tamping capacity.

Efficiencies

We have a strong track record of achieving efficiencies and reducing our unit rates. In developing our CP7 plan we've tested our ability to deliver additional efficiencies within our renewals portfolio. In track, to date, we've identified efficiencies equating to £88 million, and £57 million of transformational efficiencies are currently allocated to track. The key CP7 initiatives and themes include:

- Integrated Network Rail Management and Delivery Model

- Appropriate targeted access solutions with right access for right project, aligned across assets

- Stable workbank, consistently phased with coherent geographic and work type bundling (aligned to line of route approach)

- Investment from suppliers in plant that will increase volume within possession lengths.

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3.3.2 Drainage and lineside asset class strategy

This section sets out our strategy for management of our drainage and lineside assets to support our strategic priorities. The strategy supports our drive towards better weather and climate resilience through the proactive management of our lineside trees and vegetation and delivery of our drainage resilience works. We're in the process of transforming the way we manage drainage assets taking a data driven approach to enable the safe and reliable operation of Scotland's Railway. Below are the key pillars of our approach:

- Drainage resilience and track drainage works will be prioritised to maintain the asset condition profile and address specific safety and performance risks considering climate change effects in the design

- Drainage renewal interventions will take a whole-system approach to fully consider long-term system needs

- Boundary renewal works will continue to address life-expired boundary measures to maintain a legally compliant boundary

- We'll continue to manage our access facilities and pathways to provide safe access to the infrastructure for our staff and contractors, allowing them to safely undertake work and respond the incidents

- Vegetation management (Opex) in CP7 will be prioritised to address safety and performance risks, including hazardous trees (includes ash dieback) and problematic autumn sites.

Alignment to operations, maintenance, and enhancements

Our approach is to drive maintenance benefits through the removal of long-standing repeat failure locations. This includes targeted intervention on known boundary incursion, problematic vegetation, and flood and water management group sites to enable improved routine maintenance performance. Our intention is to reduce the number of related incidents such as flooding, tree failure, or boundary incursions to lower the instances of train accident risk (TARR) and Schedule 8 events which, in turn, have a positive impact for wider railway operations.

Innovation and technology enablers

We'll continue to work with industry partners to develop new technologies that drive efficiencies and enable us to achieve our strategy and objectives. Several workstreams are currently in development that will be in place for CP7 such as the workbank management tool (WMT), the strategic enterprise asset management system (StREAMS), the asset risk evaluation tool (ARET), and Trackwater smart sensor system. These tools, when fully implemented, will enable efficiencies in asset management, inspection, maintenance, and renewal planning.

Headline financials and outcome

In facing trade-offs, due to financial challenges, we've developed an affordability-driven approach to renewals expenditure. We'll focus our activities on the highest safety priorities to reduce costs in the next five-year period.

Following the Watford derailment, and subsequent investigations, there was a RAIB recommendation to undertake a survey of Network Rail's drainage assets. A visual survey of drainage assets was commissioned at the start of CP6, which has identified 35% more assets than were previously recorded in our asset inventory. The output of the survey has supported prioritisation of the workbank for CP7. Additional investigations will further our asset knowledge and inform the detailed scope of interventions.

More frequent extreme weather events are to be expected which, without investment, will lead to an increased likelihood of train service disruption. On this basis, our submission prioritises the high priority drainage resilience activities.

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Updates since interim Strategic Business Plan

The drainage and lineside renewals plan has been validated as sufficiently addressing safety and performance risk and hasn't been revised since the interim Strategic Business Plan. In table 3.3, the CP6 delivery plan figure is drainage only. Please note that transformational efficiencies will be allocated to this asset class at later stages.

Table 3.3: Drainage and lineside – headline financial position, £ million

Headline summary	£ million
CP6 delivery plan 2019 (DP19)	59
CP6 exit forecast position	100
Initial submission	199
Interim Strategic Business Plan (pre-efficient)	169
Strategic Business Plan (pre-efficient)	169
Interim Strategic Business Plan	166
Strategic Business Plan	166

As shown in figure 3.10, by using our market-led approach we're distributing our investment across the network. Driving spends in the Edinburgh area on the Edinburgh and Glasgow (E and G) line, East Coast Main Line (ECML), and Borders corridor are drainage works with a history of high-performance impact at Philipstoun, Drem, Craigton, and Winchburgh which attract increased costs related to the level of access and topography. Reactive workbank investment includes drainage works following flooding incidents, and investment in access facilities and pathways. An indicative split has been spread across all corridors.

Figure 3.10: Drainage and lineside – total spend by corridor, £ million (pre-efficient)

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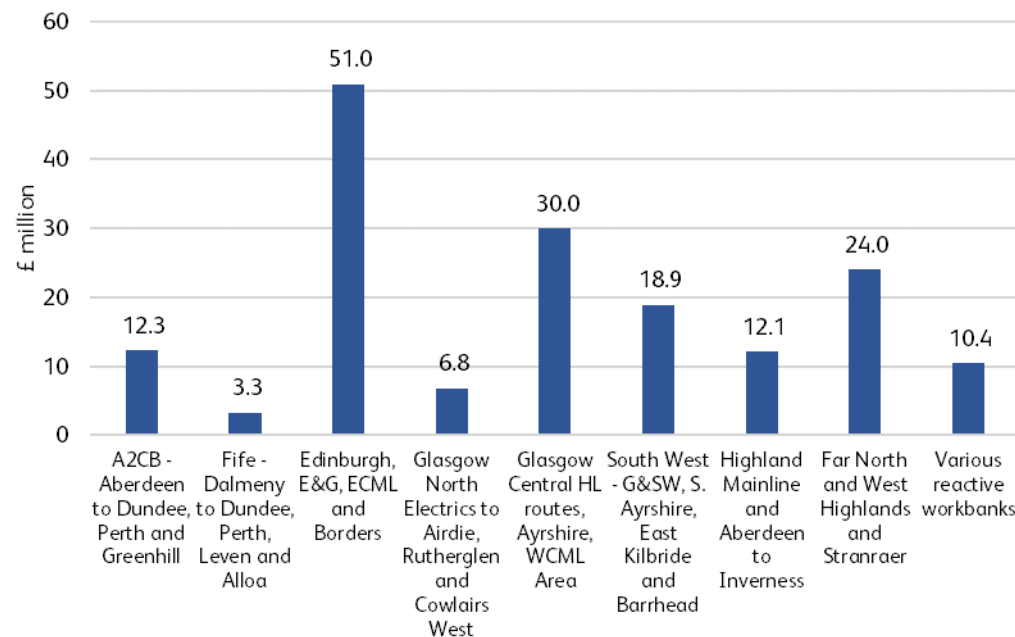
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Key risks and challenges

**Figure 3.11: Drainage and lineside – risk and mitigation**

Asset	Key Risk	Risk Description and Mitigation
Drainage	Climate change and extreme weather events	The emerging trends of increasingly heavy rainfall due to climate change compounds the challenges presented by an aging network, which is more than 100 years old. Future capacity requirements will be considered through the design and installation of new assets.
Vegetation	Ash dieback fungal disease	As part of our lineside tree survey all ash trees on our infrastructure are being identified and scored according to industry guidance. The surveys are also identifying and scoring trees which are expected to become hazardous as a result of the disease. These trees will be actioned or monitored as required.
Boundary fencing and drainage	Change of railway adjacent land use	Implementation of our land use change information (LUCI) project will support the portfolio in detecting and identifying changes in land use which may affect assets.

Historical performance

Delay minutes associated with flooding events had been trending downward until 2018; however, the summer storms of 2019 and 2020 resulted in higher delay minutes in August of those years. This was attributable to extreme convectional rainstorm events that led to significant asset failures on the West Highland Line, East Coast North, and across Fife. These events have led to a recent upward trend in delay minutes.

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Figure 3.12: Drainage and lineside – historical performance – flooding incidents

* Periods 1-11 only
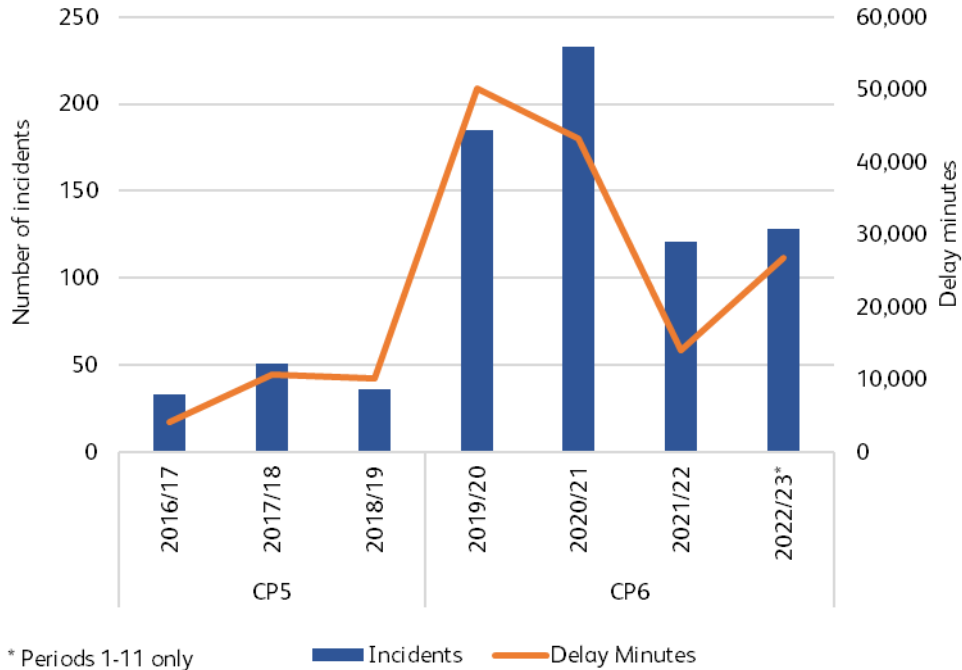
There's a downward trend in livestock incursion due to the work that we've undertaken to improve our boundary measures; stock fencing has made up 93 % of the CP6 renewals workbank targeting high-risk livestock sites. The peak of vegetation incidents occurred in year 3 of CP6 which was due to the storms Arwen, Corrie, and Malik which collectively caused over 150 tree failures.

Figure 3.13: Drainage and lineside – historical performance – livestock incursions and vegetation incidents

* Periods 1-11 only
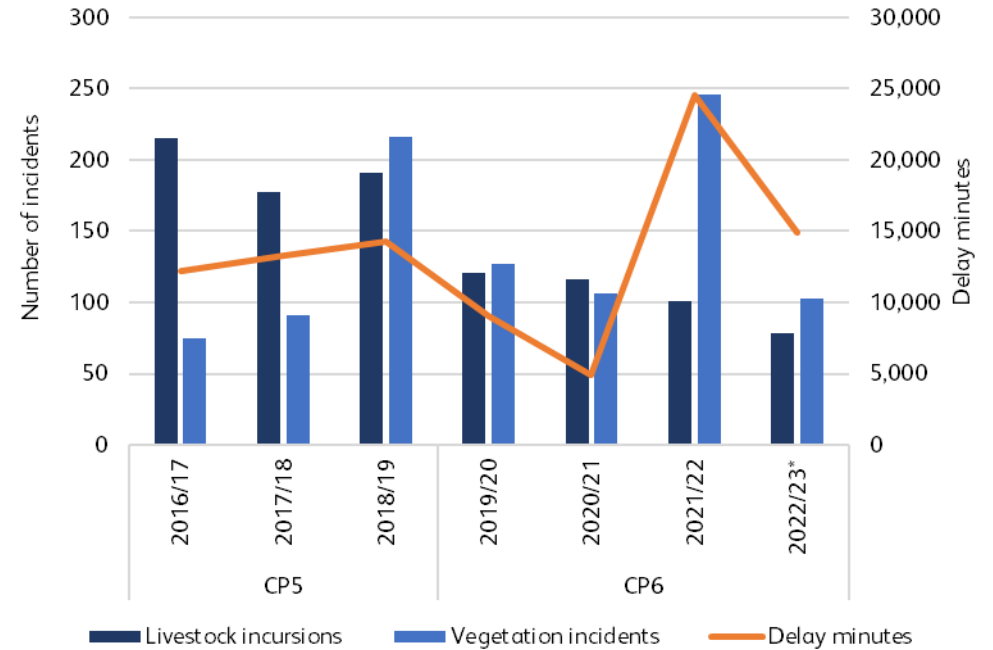
Long-term asset challenges

There are two areas which present long-term asset challenges. These are high risk drainage locations and biodiversity.

High risk drainage locations are those where the consequence of a risk arising could result in significant parent asset failure, such as major earthworks failures or significant track flowing.

Some of the potential reasons for sites being deemed 'high risk' are:

- The risk posed by flooding during normal and significant rainfall events

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- Degraded asset condition leading to a full or partial loss of function and purpose

- Assets based on local knowledge e.g., critical junction or locations where recovery of assets following failure may be compromised (such as deep cuttings).

A review of high-risk drainage sites is presently being undertaken by specialists and interventions will be developed and prioritised for delivery in CP7.

Our plan focusses on delivery of the drainage resilience activities at sites with high performance impact.

Our intention is to achieve biodiversity through the commitment that Scotland's Railway has to the offsetting and mitigating of works that are undertaken. There are mandatory requirements via the operating license and appropriate standards which cover habitat management, offsetting, and biodiversity. CP7 will build on the trials undertaken for offsetting, working with stakeholders within Forestry and Land Scotland, The Tree Council, and Forth Rivers Trust.

Delivery

Our delivery model

The delivery strategy focusses on building a supply chain, comprising internal and external delivery teams, to deliver the planned renewals and align the right size and complexity of work types with the right delivery teams to deliver the most efficient unit rates. We'll focus on delivering outcomes via a strategic partnership model underpinned by embedding key performance indicators (KPIs). All the frameworks will embed options to mini tender any specific workbanks.

Delivery risks

- Material costs and market conditions have the potential to impact the portfolio, we'll look to mitigate via purchasing materials in bulk. This will be enabled by establishing a stable workbank

- Land access costs continue to be a challenge across the railway and lead to lengthy negotiations and increased costs. Our engagement with various organisations including Forestry and Land Scotland, and Scottish Land and Estates will continue to allow us to engage with our lineside neighbours to get buy in and help deliver an efficient programme.

- There's historically a high-level of demand towards the supply chain and the resources available to deliver the planned work may diminish due to market conditions. We'll look to provide our supply chain with early visibility of our planned works to instil commercial confidence.

- Climate change will be a challenge across the portfolio requiring all assets to take forecasted weather patterns into consideration during project design phases.

- Future CP7 delivery framework rates and performance not as anticipated.

Efficiencies

We have a strong track record in achieving efficiencies and reducing our unit rates. In developing our CP7 plan we've tested ourselves to extract additional efficiencies within our renewals portfolio. In drainage and lineside, to date, we've identified efficiencies equating to £17 million. The key CP7 initiatives and themes include:

- Progression of digital survey techniques

- Greater degree of integration with our other renewals assets to maximise the line of route approach

- Cross asset resolution of third-party land access, consents, and public utility issues in advance of delivery through dedicated team resource

- Focus on fencing volumes and integration with other assets delivery to maximise access opportunities.

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3.3.3 Earthworks asset class strategy

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Environmental-related failures	3.37 (weather resilience, environmental-related failures), 3.41 (provision for weather resilience)

Our plan sets out our strategy for management of earthworks assets to support our strategic priorities and running a safe and reliable railway. Our CP7 objectives are outlined below:

- To improve our service reliability, performance, and customer satisfaction, we'll prioritise removal of sites from the CP6 exit adverse weather list. These sites are currently impacted by the imposition of speed restrictions, applied to mitigate safety risk, during extreme weather

- Reduce the frequency of extended unplanned line closures or operational restrictions following extreme weather damage

- Limit the frequency of performance affecting incidents arising from asset failures.

These will be achieved through:

- Continuing to implement a whole earthworks approach on renewal sites, commenced in CP6

- Targeting reductions in the number of sites on our adverse weather list by implementing renewals and earthworks failure detection monitoring

- Considering the system risk to the railway from proposed earthworks renewal schemes, to identify and manage any residual risk

- Undertaking work to review our thresholds, operational route sections, and decision making around the implementation of adverse weather speed restrictions

- Exploring the potential for increased data gathering and analysis of actual rainfall at key network locations to analyse the predicted forecasts and further assessing their adequacy during extreme weather events based on current threshold levels.

Alignment to operations, maintenance, and enhancements

We're directing our CP7 focus from asset renewals towards refurbishment and maintenance of assets, to extend asset life, in recognition of the challenging financial environment. Whilst the implementation of technology (e.g. tiltmeters) increases workload in control, it enables the removal of sites from the adverse weather list resulting in improved train performance. Continued alignment with operations is required where speed restrictions will be applied to mitigate safety risks.

Innovation and technology enablers

We'll seek to maximise the advances in technology to install remote failure detection monitoring on high-risk assets to provide real time monitoring of movements, with accompanying images, and reduce the need for blanket engineering speed restrictions and/or manual inspection during adverse weather.

Other new and innovative technology such as alerts for boulder incursion at existing catch fences are approaching trial stage; intended for rollout across pre-identified high-risk assets in CP7, such as Loch Eilt and Loch Treig.

Headline financials and outcome

In facing trade-offs, due to financial challenges, we've developed an affordability-driven approach to renewals expenditure. We'll focus our activities on the highest safety priorities, to reduce costs in the next five-year period, resulting in an impact on overall asset condition. In line with our policies, our plan will continue to implement, as applicable, a whole earthworks approach to renewals activities, acknowledging the

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interdependencies between earthworks and other water management assets, such as drainage.

Due to the predicted reduction in overall condition, we're planning additional mitigations to manage associated risk from potential asset failures, which can have significant impact on train service delivery. These include inspections, remote monitoring, and workbank prioritisation.

Updates since interim Strategic Business Plan

The earthworks renewals plan has been validated as sufficiently addressing safety and performance risk and hasn't been revised since the interim Strategic Business Plan. In table 3.4, please note that transformational efficiencies will be allocated to this asset class at later stages.

Table 3.4: Earthworks – headline financial position, £ million

Headline summary	£ million
CP6 delivery plan	167
CP6 exit forecast position	182
Initial submission	231
Interim Strategic Business Plan (pre-efficient)	206
Strategic Business Plan (pre-efficient)	206
Interim Strategic Business Plan	218
Strategic Business Plan	218

Figure 3.14: Earthworks – total spend by corridor, £ million (pre-efficient)
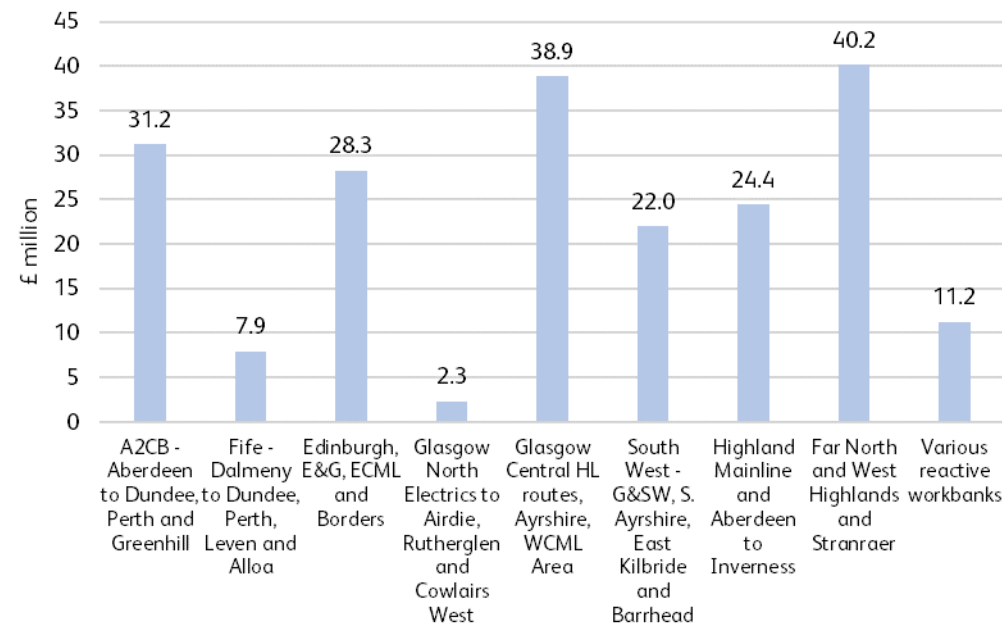
As shown in figure 3.14, by using our market-led approach we're distributing our investment across the network to manage asset specific risks. The CP7 workbank has been wholly driven by asset condition ratings and prioritised to address our highest risks to safety. Allowance has also been made to deal with the anticipated reactive works (reactive workbank), this can affect various railway corridors.

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Key risks and challenges

Figure 3.15: Earthworks – risk and mitigation

Asset	Key Risk	Risk Description and Mitigation
Outside party slopes	Large debris slides	During CP7, catchment analysis will be undertaken to identify concentration features that could activate a large debris slide. Geohazard works that started in CP6 will continue into CP7 with dedicated site visits and landslide hazard risk assessments being undertaken as we move to compliance with standards by 2029. Allowance has been made for three high risk sites to be mitigated through high-capacity fences or landslide barriers.
Third party land	Changes to the use of third-party land	Scotland's Railway can be impacted by nearby activities, which can adversely affect the existing railway drainage system. These activities include fields being ploughed in a different direction, ad-hoc field drainage alterations, and borrow pits and construction works too close to the railway boundary. These activities are monitored through regular helicopter flights and reconnaissance from asset inspections or track patrolling. In addition, the land use change information (LUCI) project will support the geotechnical portfolio in detecting and identifying changes in land use.
Earthworks	Rising unit rates	Rates are being driven up by several factors including constraints on material supply, track access, landowner access, and the COVID-19 pandemic. There's also the growing issue of the availability of resource including plant and skilled labour, driving up prices beyond current run rates. This is shown in the unit rate increases seen during years 3 and 4 and has been taken account in the forecasted unit rates for CP7.
Earthworks	Asset condition	In developing an affordability-driven approach to renewals expenditure, we'll focus our activities on the highest safety priorities to reduce costs in the next five-year period. In line with our policies, our plan will continue to implement, as applicable, a whole earthworks approach. Due to the predicted reduction in overall condition, we're planning additional mitigations to manage associated risk from potential asset failures.

The appropriateness of our mitigations is under continuous review. This includes system risk prioritisation through development of decision support tools to reduce the impact on train performance associated with earthworks. Furthermore, the additional environmental resilience expenditure will help uncover key climate change risk areas and allow us to better target our investment to address safety and performance risks.

Historical performance

The graph below highlights the number of reportable geotechnical failures (CIV/185) per year to date, split by hazard rating. CP6 year 2 is an outlier as 26 reportable failures were recorded in one single day attributed to the extreme weather event on 12 August 2020.

From CP5 through CP6 there has been a relatively steady increase in CIV/185's across all hazard ratings each year (excluding the spike in CP6 year 2). This trend can be attributed to changing climate. Schemes have been identified to target the assets at the highest risk failure, to control the impacts on performance throughout CP7.

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Figure 3.16: Earthworks – historical performance – failures by hazard rating
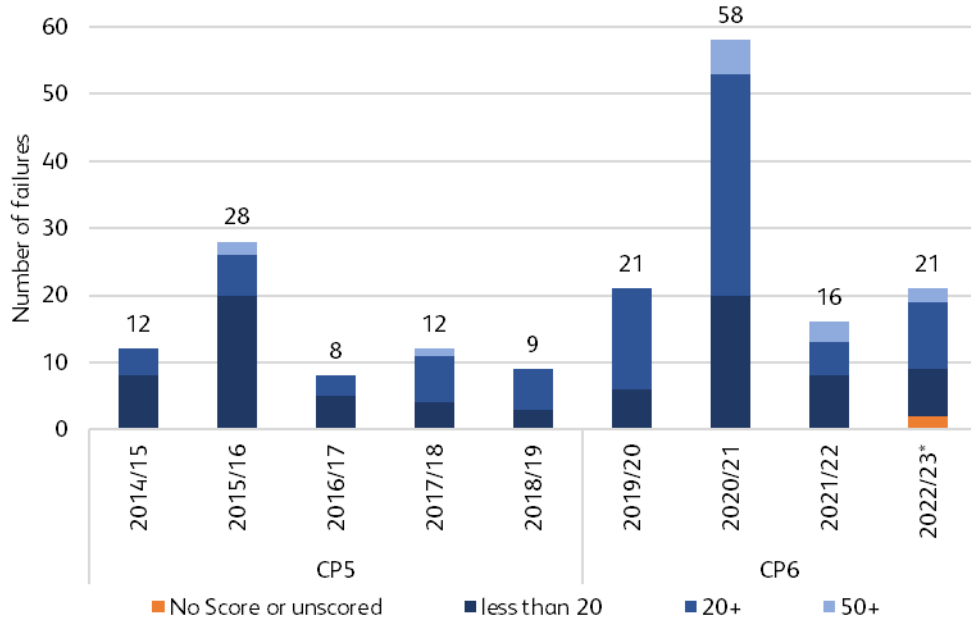
* Periods 1-11 only

Long term asset challenges

Earthworks assets are expected to make a -0.5 % contribution towards our overall CSI in CP7. In CP7 it is forecasted:

- The number of category D or E high risk assets may adversely increase by around 1.1 %

- The earthworks condition score is likely to increase by around 2 %

- Due to age and condition of earthworks portfolio, and historic investment profile, the rolling average of geotechnical failures is forecasted to increase in the long-term. This can be mitigated through sustained investment in renewals to reset asset condition.

The future control period workbanks are key to managing the scale of the challenge associated with potential failures, arising from asset condition.

Climate change will continue to have an impact on asset sustainability in the short, medium, and long-term with long periods of higher intensity rainfall predicted to increase the risk to the overall asset condition. Convective and frontal rainfall-related speed restrictions are of most significance and form an important part of our safety mitigations for our passengers, freight customers, and workforce. The performance impact of these mitigation measures will be reviewed regularly to check that the balance of performance and safety is appropriate for running a safe and reliable railway.

Delivery

Our delivery model

Our supply chain has been engaged and the current framework contractors and deliverers have confirmed they can deliver the volumes contained within the workbank. Any changes in delivery models, procurement, or contractors will be managed appropriately to maintain delivery volumes and quality of work.

Delivery risks

- Asset condition being worse than anticipated following de-vegetation activity; impacting on the type of intervention to be delivered, with potentially fewer, higher cost volumes delivered. To mitigate this risk the asset management team have altered the methodology of remitting works; more site visits are being undertaken throughout the year, and delivery and asset teams have agreed that remits will be updated iteratively

- Work type instability arising from resilience-based issues that could disrupt the planned workbank. To mitigate, we'll utilise our fund for technology to monitor the lower priority worksites, allowing the asset team to make use of real-time information on assets. This information will assist with making adjustments to the plan to respond to new or emerging priorities. Additionally, there's an aim for the asset and delivery teams to advance project design phases, increasing the preparation time prior to implementation

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- Third party and railway access may not be available, or aligned with consents, preventing optimal programme to be achieved for resource planning and plant utilisation. The CP7 efficiency programme is targeting improvements in this area and delivery and asset teams will work together to mitigate risks

- Forecasted CP7 delivery framework rates and delivery performance were not as anticipated. To enable maximum output, teams are working hand in hand across all disciplines to identify efficiencies on every project and route corridor.

Efficiencies

We have a strong track record in achieving efficiencies and reducing our unit rates. In developing our CP7 plan we've tested ourselves to extract additional efficiencies within our renewals portfolio. In earthworks to date, we've identified efficiencies equating to £5 million. The key CP7 initiatives and themes include:

- Enhancing in-house vegetation management capability

- Appropriate targeted access solutions with right access for right project, aligned across assets

- Cross-asset resolution of third-party land access, consents, and public utility issues in advance of delivery through dedicated in team resource

- Bulk buying core commodities.

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3.3.4 Structures asset class strategy

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Structure clearance	3.28, 4.21

Project works will prioritise schemes where safety is the primary driver. Incremental workforce safety improvements will continue, such as provision of edge protection.

The approach to structures renewals for CP7 adopts a risk-based approach, focusing on Scotland's Railway specific priorities, including:

- An ongoing programme to combat the risk of scour damage to structures. This will follow on from the CP6 train accident risk reduction (TARR) programme by addressing structures with a scour risk of 15.8 and above. This change (from 16.0 in CP6) is aligned with a change in national policy and the challenges of climate change

- A programme of proactive stabilisation measures to structures identified by the review undertaken following the parapet/spandrel wall failure at Underbridge 133/328 near Stonehaven in January 2021

- Continuation of the side-long-ground renewal strategy for West Highland Line culverts which present a risk of embankment washout due to the topography of sections of this route; this is combined with the anticipated impact of climate change which is predicted to be most severe in this area of the United Kingdom.

Alignment to operations, maintenance, and enhancements

Our structures maintenance budget is partially classified as capital expenditure (Capex). Additional maintenance and mitigation works, implemented as opposed to additional refurbishments, will be funded from Capex. The value of the maintenance activities will maintain CP6 levels. Inspection costs have been increased to accommodate additional

mitigation and monitoring. As a result, we're planning for additional reactive maintenance work.

Our bottom-up plan aligns with the committed enhancement programme. Our Route Asset Management (RAM), Capital Delivery (CD), and Rolling Programme of Decarbonisation (RPD) teams have regularly engaged to consolidate workbanks, where appropriate, and to optimise synergies for access.

Innovation and technology enablers

We currently have water level telemetry installed at 44 structures and these are managed through our RADAR monitoring system. Of these structures, 18 are at higher risk of scour or flooding. Activation of the RADAR system triggers mitigation actions under the adverse and integrated weather plan. Our plan includes for fitment of water level telemetry and cameras to all remaining and emerging higher risk scour and flooding structures in CP7.

We're planning to extend the use of laser cloudburst surveys to monitor movement in structures. This technique was initially used to monitor overbridges containing high alumina concrete (HAC) for signs of deflection. We'll also be looking to extend the usage to checking for active movement in retaining walls.

We're early adopters of the research and development programme's Panoptic Bridge Management (PBE) programme, with 13 masonry arch bridges planned to be inspected using this new procedure in 2023 with roll out extended in CP7.

Headline financials and outcome

In facing trade-offs, due to financial challenges, we've developed an affordability-driven approach to renewals expenditure. We'll focus our activities on the highest safety priorities to reduce costs in the next five-year period. In line with our policies, our plan will continue to implement, predominantly, refurbishment interventions but we'll become more targeted in our approach by focusing on the specific elements of scope that are the primary driver for renewal.

We're planning additional mitigations to manage associated risk from potential asset failures, which can have significant impact on train service delivery. These include increased reactive maintenance works, informed by a higher inspection and monitoring regime.

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Updates since interim Strategic Business Plan

The cross-asset prioritisation identified structures as an asset class in need of greater investment due to safety risks. In order to fund this investment, the low safety and performance driving intervention of painting was identified for repurposing. This resulted in £25 million of structural painting works to be removed from the renewals workbank to be replaced with a total of £87 million more investment in safety critical interventions. These include renewals/refurb of high-risk coastal flooding defences, culverts, retaining walls, and over/under bridges. As a result, the renewals workbank has increased by a net £62 million. In table 3.5, please note that transformational efficiencies will be allocated to this asset class at later stages.

Table 3.5: Structures – headline financial position, £ million

| Headline summary	£ million
CP6 delivery plan 2019 (DP19)	420
CP6 exit forecast position	390
Initial submission	456
Interim Strategic Business Plan (pre-efficient)	374
Strategic Business Plan (pre-efficient)	435
Interim Strategic Business Plan	372
Strategic Business Plan	429

As shown in figure 3.17, by using our market-led approach we're distributing our investment across the network, to manage asset specific risks.

The spend profile is highest in the Glasgow Central High-Level routes, Ayrshire, and West Coast Main Line (WCML) corridor. This is partly a function of the size of this corridor, which encompasses the whole West Coast Main Line, with a large number of bridges and culverts, due to the terrain, and the majority of the Glasgow south side suburban network with a high density of lines and bridges in the Glasgow city area at intersections with the road network. 36 % of our planned overbridge expenditure is in this corridor, due to the

known poor condition of metallic overbridges on the Glasgow electrified suburban network.

The Far North, West Highlands, and Stranraer corridor also have significantly above average planned expenditure. Again, this is due to the high number of bridge and culvert assets due to the challenging topography and also the greater exposure to extreme weather conditions. The generally poorer asset condition and higher safety consequences from asset failure are also factors which will be mitigated by the associated investment.

Figure 3.17: Structures – total spend by corridor, £ million (pre-efficient)

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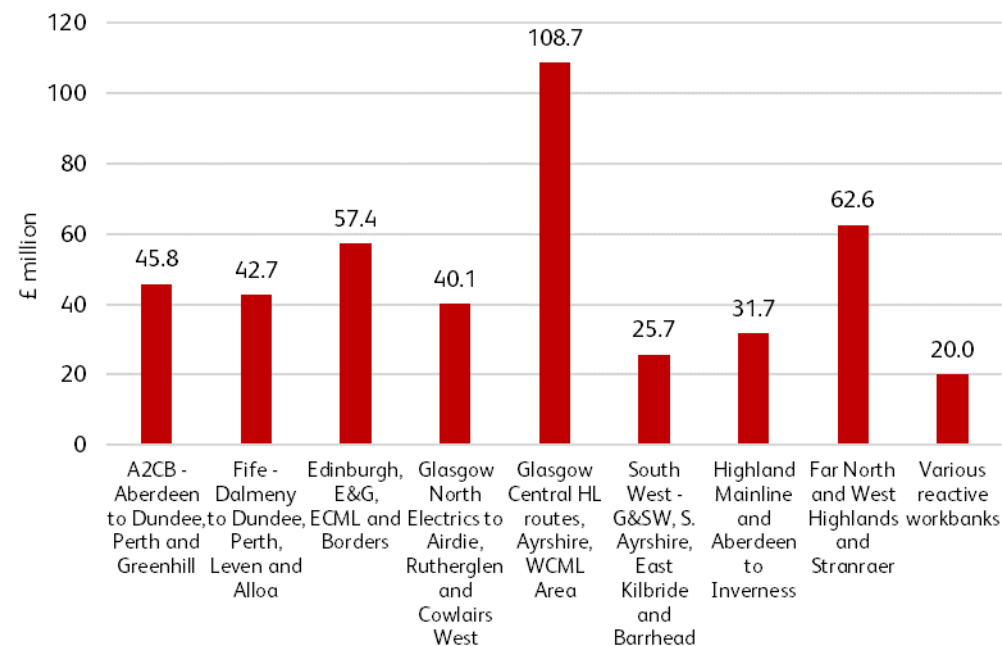
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Key risks and challenges

Figure 3.18: Structures – risk and mitigation

| Asset	Key Risk	Risk Description and Mitigation
Underbridges	Poor condition of structures	The CP6 average bridge condition marking index (BCMI) score may not be achieved due to the investment being reprioritised in years 4 and 5. BCMI is likely to reduce slowly through CP7. We intend to mitigate via accurate cross-asset prioritisation of investment in future control periods, and increased provision for additional examinations in CP7.
Overbridges	Poor condition of structures	The condition of our metallic overbridges is poorer than the national average. The planned CP7 workbank is likely to result in a decrease in average asset portfolio condition. We intend to mitigate via accurate cross-asset prioritisation of investment in future control periods, and increased provision for additional examinations in CP7.
Culverts	Failure on steep sidelong ground	Collapse of a culvert on steep sidelong ground can lead to embankment washout and safety risks. This will be mitigated by the West Highland Line (WHL) culvert strategy and deployment of the local workbank prioritisation tool.
Retaining walls	Wall failures	There's been an increasing trend of retaining wall failures in recent years. Examination reports are primarily textual narratives and less systematic than on bridges and tunnels. Increased planned expenditure in CP7 together with the introduction of Retaining Wall Condition Index (RWCI) and use of cloud burst surveys will improve the quality of exams and prioritisation of remedial work.

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Historical performance

Figure 3.19: Structures – historical performance – wrong side failures (WSF)
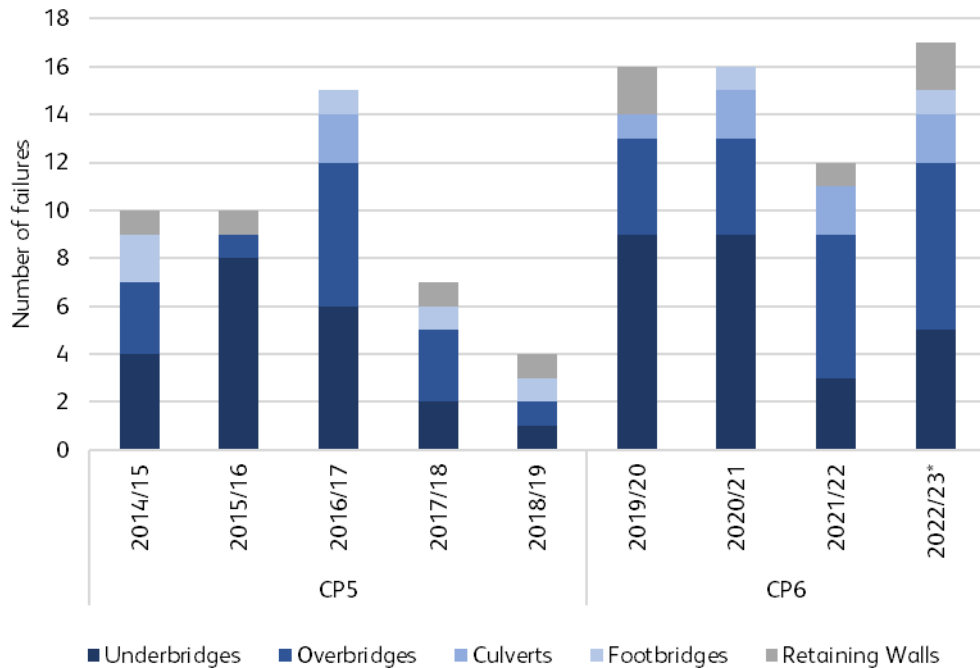
* Periods 1-11 only

The Rail Safety and Standards Board precursor indicator model (PIM) dashboard, which weights wrong side failures, shows an upward trend through CP5 and CP6 because of an increasing trend in the number of higher hazard scoring events. In CP7 we plan to address this by having targeted workstreams focused on mitigating and remediating risks with significant incident histories, for example bridge scour and falling masonry.

Long term asset challenges

Based on planned expenditure, the average bridge deck Bridge Condition Marking Index score is forecasted to reduce by approximately 2.2% in CP7.

Structure assets are expected to make a -0.7% contribution towards our overall CSI in CP7.

The rail network in Scotland contains a broad mix of lines including linear cross-border intercity lines, the complex cross city high intensity suburban network in Glasgow with significant sections in under street cut and cover tunnels, and rural single-track branches where performance incidents have the potential to affect train performance as far away as London Euston due to the route covered by the Caledonian Sleeper.

Weather and terrain significantly influence our strategy. Our assets are often subjected to greater extremes of weather than other areas of the United Kingdom. Sections of the West Highland Line experience the highest average annual rainfall in the United Kingdom. Outside of the Scottish central belt, due to the mountainous terrain, railway lines tend to follow the coast or contour through upland passes. As a result, we have a higher-than-average proportion of assets, from large viaducts to small culverts, over watercourses, many of which are prone to flash flooding and subject to seasonal snowmelt. This results in us having a higher-than-average exposure to bridge scour risk.

The percentage of our metallic bridges in poor condition is an outlier, network-wide. Historically, repainting has not been invested in, to the extent required to maintain asset condition.

We'll continue to collaborate with stakeholders to identify the appropriate long-term investment options for managing route availability, to balance affordability with supporting freight growth. We'll continue to support the network in line with published capability and that granted via RT3973 forms.

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Delivery

Our delivery model

We'll deliver our Capex and Opex workbank through three separate delivery models. The majority of our renewals programme will be delivered through framework contracts managed by our Capital Delivery supply chain route. Our existing contracts extend until the end of CP7 year 2, providing continuity through the control period change, and enabling a staged contract transition with scheme development being delivered by the implementation contractors throughout. This will mitigate the risk of reduced volume delivery we've historically experienced at control period transition. Smaller and less complex renewals will continue to be delivered by our internal Works Delivery as will our Capex and Opex minor works. Greater use of Tier 2 contractors will be utilised in CP7.

Delivery risks

- Railway access not available or aligned to efficiently deliver programme. The CP7 efficiency challenge takes cognisance of this risk, and the delivery and asset teams will work together to mitigate this

- Third party land access permissions and costs increase. The CP7 efficiency challenge considers this risk, and the delivery and asset teams will work together to mitigate this

- Reactive workbank disrupts the planned workbank. A proportion of the Capex and Opex Minor Works budgets will be ringfenced for reactive works

- Forecasted CP7 delivery framework rates and delivery performance not being as anticipated. To enable maximum output, teams are working hand in hand across all disciplines to identify efficiencies on every project and route corridor

- Timing of investment decisions for enhancements may impact renewals delivery and potential synergies

- Workbank stability is a key aspect of our efficiency programme. Changes in the timings for enhancement schemes can impact this. Route corridor strategies will mitigate this risk as well as supporting the identification of synergies between renewal and enhancement projects.

Efficiencies

We have a strong track record in achieving efficiencies and reducing our unit rates. In developing our CP7 plan we've tested ourselves to extract additional efficiencies within our renewals portfolio. In structures, to date, we've identified efficiencies equating to £39 million. The key CP7 initiatives and themes include:

- Progression of Digital Survey Techniques

- Dedicated framework to deliver specialised metallic structures interventions

- Use of internal delivery teams for non-complex minor works

- Tax recovery; for example energy efficient lighting and removal of lead paint.

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3.3.5 Buildings asset class strategy

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Structural clearance, freight gauge capability	4.17, 4.21

Our buildings are at the heart of the railway. They provide the interface between passenger and train, house the equipment that run the railway, and the staff to operate it.

Our strategy for CP7 is to promote and embed a design and asset engineering approach for our built environment that improves passenger satisfaction, safety, stewardship, and sustainability (4S's). The 4S's set key criteria that can be mapped to our objectives and better take us towards realising our vision. Our policy promotes holistic consideration of these factors. For CP7, the overall objectives remain:

- Improving safety: maintaining the integrity of our platforms, footbridges, canopies, and mechanical and electrical assets

- Asset performance: Maintaining our assets to maintain high performance.

Alignment to operations, enhancements, and maintenance

We'll continue to issue a significant amount of work for internal delivery, enhancing our capabilities, and building on successful delivery in CP6.

In our plan we've identified opportunities to undertake minor refurbishment and re-modelling to some of our small to medium maintenance delivery units, improving welfare accommodation for our workforce.

In addition, we've aligned our CP7 Plan with the requirements of other asset classes – notably signalling and electrification and plant – by taking a prioritised approach to signal box, signal centre, and electrical control room life extension and minor refurbishment/re-modelling interventions.

Innovation and technology enablers

As part of our examination regime for high voltage lineside buildings, we'll be utilising insulated pole-mounted cameras, to enable roof areas to be inspected without the need for a disruptive isolation. This will also facilitate a move to dayshift inspection, improving inspection quality and workforce safety.

Introduction of the new asset management system, CITADEL, will support us in undertaking real-time planned preventative maintenance, with the ability to update records using tablet technology. CITADEL will also allow us to store and explore 3D drawings and imagery, and to upload drone surveys.

We've successfully trialled a critical lineside building wrap system which allows us to encapsulate existing modular buildings to provide a wind and watertight building, improving thermal performance.

Headline financials and outcome

In facing trade-offs, due to financial challenges, we've developed an affordability-driven approach to renewals expenditure. We'll focus our activities on the highest safety and asset reliability priorities, to reduce costs in the next five-year period. In line with our policies, our plan will continue to implement, predominantly, refurbishment interventions but we'll become more targeted in our approach by focusing on the specific elements of scope that are the primary driver for renewal.

Due to the predicted reduction in overall condition, we're planning additional mitigations to manage associated risk from potential asset failures, which can have significant impact on train service delivery. These include targeted reactive maintenance works, informed by our inspection and monitoring regime.

Updates since interim Strategic Business Plan

The buildings renewals plan has been validated as sufficiently addressing safety and performance risk and hasn't been revised since the interim Strategic Business Plan. In table 3.6, please note that transformational efficiencies will be allocated to this asset class at later stages.
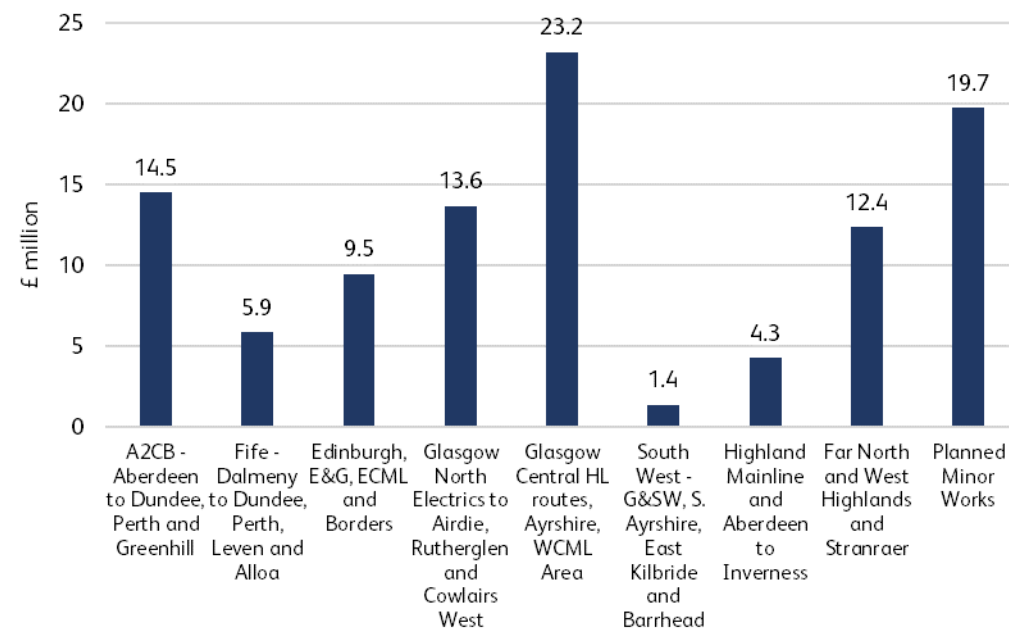
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Table 3.6: Buildings – headline financial position, £ million

Headline summary	£ million
CP6 delivery plan 2019 (DP19)	117
CP6 exit forecast position	115
Initial submission	112
Interim Strategic Business Plan (pre-efficient)	104
Strategic Business Plan (pre-efficient)	104
Interim Strategic Business Plan	111
Strategic Business Plan	111

Figure 3.20: Buildings – total spend by corridor, £ million (pre-efficient)

As shown in figure 3.20, by using our market-led approach we're distributing our investment across the network, to manage asset specific risks. A large proportion of our works are centred around the Glasgow High Level, Ayrshire, West Cost Main Line, and North Electrics corridors, comprising a combination of platform renewals and refurbishments. In the Far North we've planned works focusing on signal box refurbishment, lineside buildings, and radio electronic token block (RETB) equipment buildings. Our minor works budget will focus on all parts of the estate over the eight corridors.

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Key risks and challenges

Figure 3.21: Buildings – risk and mitigation

Asset	Key Risk	Risk Description and Mitigation
Planned preventative maintenance	Demand for increased public performance measure budget	The new asset management system has the potential to identify additional maintenance tasks required to maintain the assets. This is mitigated through the creation of a public performance measure plan that focusses on statutory obligations, to support prioritising interventions
Fire	The management of fire risk defects	A new fault management system has been developed (IRIS) to manage and track defects. This will form part of the fire risk assessments.
Mechanical and electrical installations	Volume of generated faults	CP6 saw an increasing number of works to mechanical and electrical installations which impacted the minor works budget. CP7 includes funding for such issues and we're currently working with the train operating companies to move beyond minimum testing and adopt a 100 % testing target.

Historical performance

Our historic wrong side failures have remained, broadly, static across the last two control periods. The improvement in years 1 and 2 of CP6 can be attributed to COVID-19 and the reduced numbers of travelling public and the way that faults were reported. E.g. more issues were raised as requiring maintenance attendance, rather than impacting the rail network, through our examination regime. Lifting of the COVID-19 restrictions has seen arising faults return.

Figure 3.22: Buildings – historical performance – wrong side failure (WSF)
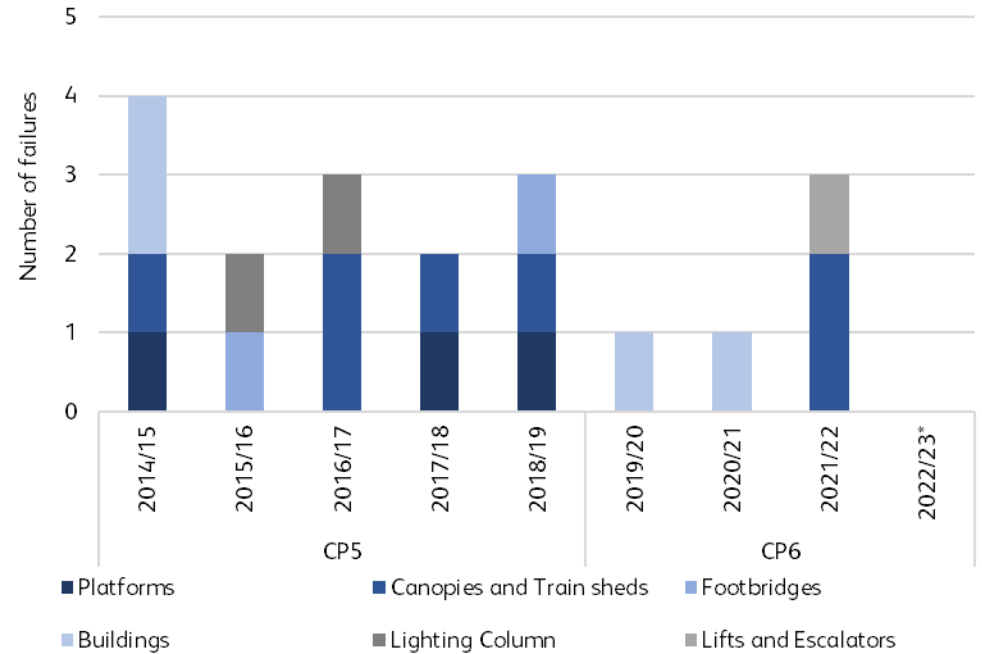
* Periods 1-11 only

Long term asset challenges

Building assets are expected to make a -0.2 % contribution towards our overall CSI in CP7.

There are a number of areas that present long-term asset challenges. These are:

- Electrical and mechanical (E and M) – we've taken the position to test and inspect 100 % of electrical installations, over and above the standard required, as it is deemed a critical asset to performance and safety. Electrical inspection and testing is currently a responsibility of the train operator and it's our understanding that they continue to undertake the minimum required amount

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of testing. We're therefore working collaboratively to adopt the approach of 100% testing

- Fire – Our new fault management system, IRIS, will aid in managing and tracking defects, identifying, and closing out, high-risk fire related defects discovered as part of surveys and risk assessments during CP7, moving to medium risk areas in CP8 and beyond

- Asset knowledge – ascertaining the condition of assets is critical, as well as being able to predict asset deterioration rates and remaining life. The introduction of our new asset management system will support prioritisation and planning of works, with the ability to update and utilise records in real-time, presenting an opportunity to improve efficiencies

- Platforms – We'll continue to target problematic forms of construction which lead to both safety and performance issues. We'll prioritise the highest-risk assets for renewal and undertake targeted repairs to those which do not meet the requirement for renewal

- Footbridges – We'll continue to undertake refurbishment and repair works, similar to previous control periods.

Delivery

Our delivery model

The plan will be delivered by various delivery teams. We'll utilise a mixture of frameworks, such as the building framework currently with a Tier 1 contractor, mini-competition framework, and the use of our internal teams where this is deemed most efficient.

Both Glasgow Central and Edinburgh Waverley are grade 'A' listed stations. In CP7, the focus will be on maintaining the external fabric of these properties.

The strategy around platform renewals at managed stations will comprise a 'top third re-build' as part of capex business plan projects. As part of the renewals workbank, there will also be a focus on platforms with adverse cross-fall (slope towards the track), and those platforms which are of a problematic construction.

Delivery risks

- Existing asset condition – a stable and smooth workbank will enable a strong start to CP7, and inspections will be used to monitor the ongoing condition of assets. We'll collaborate with delivery teams to facilitate a smooth and stable delivery plan, and where possible utilising opportunities to reduce peaks and troughs

- Workload constraints led by fluctuations in the wider construction industry – going to the market as early as possible with planned advanced designs will improve availability. As part of early planning, remits for most complex works will be agreed between internal teams prior to the commencement of CP7

- Material supply issues due to global instability – supply chain will be engaged early in the project life cycle to support workbank stability.

Efficiencies

We have a strong track record of achieving efficiencies and reducing our unit rates. In developing our CP7 plan we've tested ourselves to extract additional efficiencies within our renewals portfolio. In buildings, to date, we've identified efficiencies equating to £3 million. The key CP7 initiatives and themes include:

- Closer integration of property functions including ScotRail Trains

- Tax recovery, for example energy efficient lighting and removal of lead paint

- Use of internal delivery teams for non-complex minor works.

3.3.6 Signalling and level crossings asset class strategy

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Signalling strategy	4.11, 4.12, 4.13

Our strategy is aligned with the following principles and is a key enabler to the 'Signalling Scotland's Future' approach:

- Aligning the workbank with enhancement schemes (where possible), and the rolling programme of decarbonisation, to optimise the output into line of route strategies in accordance with the framework set out in 'Signalling Scotland's Future'

- Basing renewal decisions on asset condition and obsolescence, enabling a 'right time' approach to interventions, prioritising safety and performance outcomes

- Reusing sustainable equipment and delivering resilience to extreme weather and the changing climate

- Realising level crossing closure opportunities and taking a pragmatic and cost-effective approach to level crossing renewals, prioritising safety risks

- Challenging standards, benchmark rates and adopting Project SPEED principles to drive further efficiencies

- Net cost – assessing asset interventions against the net cost for each line of route

- Modernisation of equipment: opportunities to modernise equipment enable lowering operational expenditure and, in turn, the net cost to Scotland's Railway; within the framework of 'Signalling Scotland's Future'.

Signalling Scotland's Future

Scotland's Rail Industry is working together to develop our Signalling Scotland's Future strategy, to set out our approach to signalling renewals in Scotland through CP7 and beyond. The strategy is to be driven by sustainability, economic value and affordability, reduced obsolescence, and delivering customer improvements.

The strategy is being developed on a line of route basis to assess, and select, the most appropriate train control options (and implementation timelines). The line of route assessments will take the form of bespoke business cases with each being assessed on elements such as: strategic plans and forecasted growth, operating costs and revenue, our decarbonisation programme (and other planned enhancements), rolling stock changes, and other train operator plans intervention will align with an, holistic, end goal state which will be defined in our Concept of Operations (CONOPS). The scope of CONOPS is to provide a clear strategic narrative of the end state of operations for Scotland's Railway, covering both signalling and electrical control operations. It will consider how we further integrate with train operating companies to achieve more effective track and train integration. The CONOPS vision is to *'deliver the best operational outcome, for the lowest net cost'*.

In February 2023, Signalling Scotland's Future was recognised in Transport Scotland's CP7 HLOS as a key requirement which will shape the Signalling Strategy for Scotland; to be completed by 31 March 2024.

An industry steering group comprising of representatives spanning the Scottish rail industry is fully established to lead the industry through the agreed framework, managing activities within this, to maintain the overall vision and deliver the strategy.

Alignment to operations, maintenance, and enhancements

Our approach to drive maintenance benefits is through standardising signalling equipment which will simplify maintenance activities. There will be training requirements for the delivery units, to be programmed in a timely manner, to secure appropriate competencies. Continuing the conversion towards a digital platform removes risk from

legacy mechanical and electromechanical skills fade and can encourage diversity in workplace (attracting applications from other digital industries). Conversion to digital also facilitates increased remote monitoring opportunities, minimises lineside access in fault finding and potential maintenance operational savings. Providing that alignment with enhancements is achieved, as set out above, there will be significant Opex savings.

In order to enable planning under the Signalling Scotland's Future framework, the synergy between the signalling renewals workbank and the following proposed enhancements is an opportunity to deliver a greater system upgrade: Aberdeen to Central Belt Journey Time Improvements; Aberdeen to Central Belt Decarbonisation; and Fife Phase 1 Decarbonisation. This is offering a once-in-a-life cycle opportunity to modernise the signalling infrastructure and deliver significant Opex benefits.

We're developing proposals for remodelling Perth so that it's fit for the future and reduces whole industry cost, linking renewal funding with the proposed decarbonisation programme. It's important to note that Perth re-signalling development will continue for the remainder of CP6 and shall be concluded in the context of the other line of route signalling development on Aberdeen to Central Belt (A2CB). This will further validate the Perth anticipated final cost.

Innovation and technology enablers

Examples of technologies that are being incorporated in our CP7 plan are outlined below:

- Innovative use of Frauscher axle counter technology is facilitating the reduction in traditional lineside cable infrastructure

- Level crossing products are innovating through the use of programmable logic controller (PLC), as opposed to a relay-based technology

- Harnessing the benefits established in CP6 with the new lower-cost digital signalling infrastructure installed at Inverness Airport.

Headline financials and outcome

In facing trade-offs, due to financial challenges, we've developed an affordability-driven approach to renewals expenditure which will transition our workbank mix from more full renewals to a blend of renewals and life extending interventions. We'll focus our activities on the highest safety and performance priorities, to reduce costs in the next five-year period.

Updates since interim Strategic Business Plan

The cross-asset prioritisation identified £15 million of low safety and performance investment to be repurposed, enabling additional investments in environmental resilience, structures and electrification and plant asset classes. The renewals plan has been, therefore, reduced by £15 million to deliver similar volumes across level crossings more efficiently and minor signalling descoping to be managed by targeting the specific elements of scope that are the primary driver for renewals. In table 3.7, please note that transformational efficiencies will be allocated to this asset class at later stages.

Table 3.7: Signalling and level crossings – headline financial position, £ million

Headline summary	£ million
CP6 delivery plan 2019 (DP19)	460
CP6 exit forecast position	396
Initial submission	398
Interim Strategic Business Plan (pre-efficient)	348
Strategic Business Plan (pre-efficient)	334
Interim Strategic Business Plan	358
Strategic Business Plan	345

As shown in figure 3.23, by using our market-led approach we're distributing our investment across the network, to manage asset specific risks. By transitioning from a full renewals focused plan towards more life extension activities, we'll prioritise maintaining

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safety and asset performance of the line while reducing the cost of our renewals plan. There are significant asset renewals at Dundee, Aberdeen, Arbroath, and Inverkeilor. In addition, there are works required at Fife to address obsolete train detection. The reactive workbank represents emerging safety risks and maintenance delivered workbanks.

Figure 3.23: Signalling – total spend by corridor, £ million (pre-efficient)
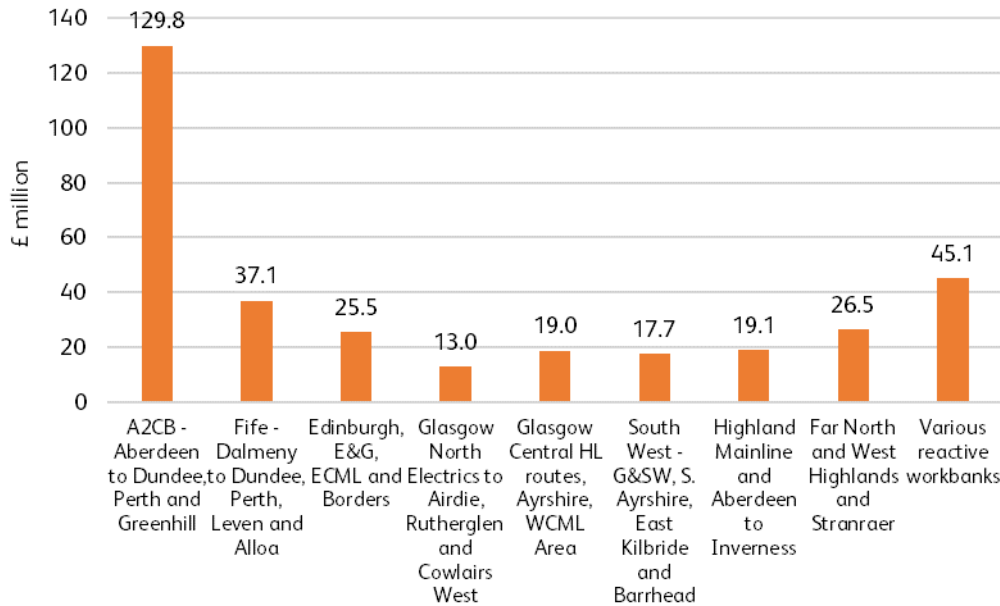
Key risks and challenges

Figure 3.24: Signalling – risk and mitigation

Asset	Key Risk	Risk Description and Mitigation
Cable	Aging asset population	The condition of multicore cables is aging and is a regular and disruptive failure point. Significant renewal plans are in place for this asset type in CP7.
Train detection	Obsolescence	There's a significant population of asset components that need replacement due to obsolescence. The volume of components is such that works will span several control periods. This results in residual risk for the remaining population. We're prioritising our renewals programme based on a risk-based approach.
Legacy assets	Modernisation and legacy standards	Where equipment changes are proposed but do not include whole system modernisation, this generates challenges due to retention of legacy procedures and standards. This will be mitigated by avoiding modification where possible, challenging legacy standards and maintaining workforce competence.
Legacy infrastructure	Capability for modifying equipment	It's expensive to modify signalling equipment, and resources to undertake this work are scarce. Minor modifications might not be financially viable. Proactive engagement with original equipment manufacturers will be undertaken alongside utilisation of support contracts.
Signal Posts	Structural risk	Due to aging of assets, the structural integrity of signal posts has deteriorated and poor condition has become more prevalent over time. Targeted renewals will be implemented during CP7.

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Historical performance

The figure 3.25 shows an improving trend in our number of service affecting failures over the past control periods. This is due to investment, particularly in cables, and increase in remote condition monitoring (RCM) 'predict and prevent' activities rather than being reactive to failures.

Figure 3.25: Signalling – historical performance – service affecting failures (SAF)

* Periods 1-11 only
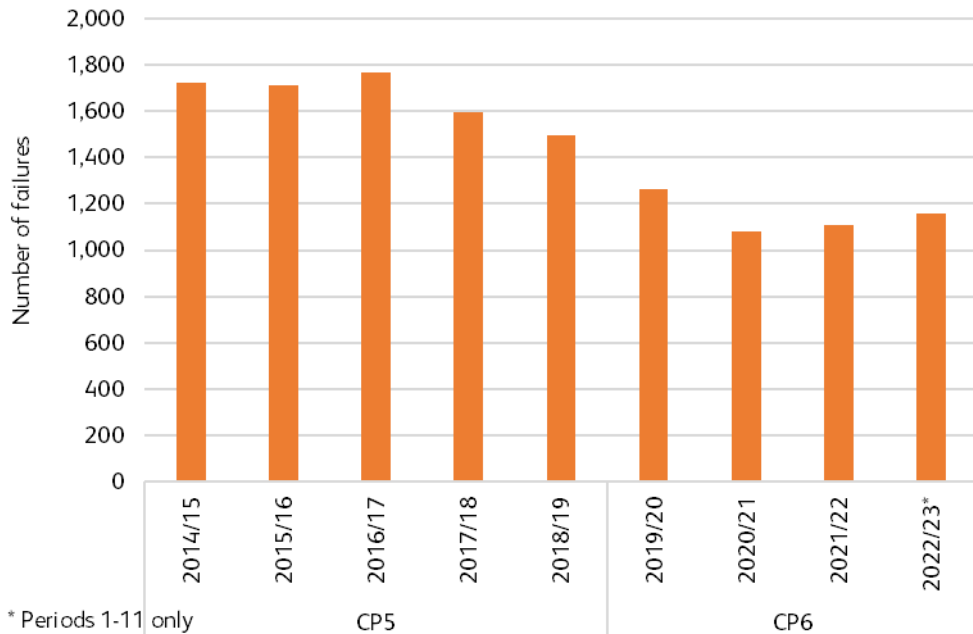
Long term asset challenges

Signalling assets are expected to make a -0.8% contribution towards our overall CSI in CP7. This forecast reflects the application of more targeted refurbishment works rather than full renewal works in the next five-year period.

There are a number of areas that present long-term asset challenges:

- The ability to maintain and modify legacy signalling infrastructure is becoming increasingly limited and disproportionately expensive. We'll minimise the modification of legacy infrastructure due to limited supply chain capability. Legacy infrastructure can be maintained safely with the existing maintenance capability

- Obsolescence remains as a risk for signalling and modernisation drives the requirement to adopt modern signalling principles. We'll take a risk-based approach in managing compliance, which will consider, where feasible, to challenge the existing standards. We'll continue to proactively monitor obsolescence and work with the supply chain to mitigate skills fade

- The reliance on original equipment manufacturer (OEM) support contracts perpetuates reliance on one supplier and does not drive competition. We're aiming to move toward commercial off the shelf technology to diversify the market

- A pathway towards an eventual digital platform is preferred, as the ease of modification makes infrastructure more adaptable

- Due to aging of assets, the structural integrity of signal posts has deteriorated, and poor condition has become more prevalent over time. Mitigation will be provided through targeted renewals over CP7 which will be managed in conjunction with structures

- Due to aging of assets, poor condition of signalling multicore cables is causing a risk of failure. Recent testing has underlined this risk which will be remediated with a rolling programme of renewal commencing in CP7.

Delivery

Our delivery model

Signalling has four main contracting arrangements for project delivery.

- Signalling collaborative partnership: delivering the major signalling enhancements with modern technology

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- Signalling power and communications framework: delivering 'medium' scale signalling renewal projects, providing general modernisation and/or refurbishment. Also delivers level crossing renewals and refurbishments

- Rail Systems Alliance Scotland: a multi-disciplinary alliance which is engaged to provide sponsorship for multi-discipline renewals

- Works Delivery: internal Scotland's Railway resource capability, delivering lower complexity life extensions or level crossing renewals.

Delivery risks

- Alignment opportunities with potential enhancement schemes rely upon commitment of investment. We'll continue to collaborate across Scotland's Railway to pursue the best overall solutions for passenger and freight users

- Retention of sufficient levels of resource: mitigation will be provided by establishing and maintaining a stable workbank for CP7 as well as continuing to develop longer term proposals through 'Signalling Scotland's Future'

- The global supply chain for critical materials continues to present a risk to projects. Early supply chain engagement and consideration of earlier purchase agreements will be prioritised to mitigate delivery risk and cost increases.

Efficiencies

We have a strong track record in achieving efficiencies and reducing our unit rates. In developing our CP7 plan we've tested ourselves to extract additional efficiencies within our renewals portfolio. In signalling, to date, we've identified efficiencies equating to £22 million. The key CP7 initiatives and themes include:

- Development of signalling strategy to integrate supply chain technical expertise to work in a collaborative delivery model with Scotland's Railway

- Continued focus on access decision making to drive costs down

- Early purchase of materials to seek improved buying opportunities, reduce inflation impact and enable on-time materials delivery, avoiding project delay

- Possession cost reduction by focusing on packaging and sharing worksites and synergy between renewals and larger scale enhancements, using a corridor approach.

3.3.7 Electrification and plant asset class strategy

Our strategy prioritises safety, performance and obsolescence risks across the asset class. Interventions are prioritised in line of route criticality, with the mix of targeted and full renewals being balanced to maintain outputs. We'll achieve this by doing the following:

- Commencement of mark 1 overhead line equipment refurbishment programme on North Electrics to mitigate known condition issues, obsolescence, and to improve hot weather resilience

- Targeted resilience interventions across non-mainline legacy signalling power supplies to improve asset condition and performance

- Completion of strategic signalling power supply renewals programme, running since CP4, on primary routes (West Coast Main Line and North Electrics), improving safety for our workforce and driving improved asset reliability

- Delivery of Scotland-wide overhead line equipment (OLE), bridge, tunnel and campaign changes and minor renewal interventions to maintain safety and performance of the overhead contact system

- Assurance of and support to the rolling programme of decarbonisation to enable the delivery of strategic priorities, including integration with the legacy power systems network

- Targeted, condition-based interventions across fixed plant and legacy metal-clad 25kV distribution assets to maintain safety and reliability.

Our electrification and plant CP7 strategy aligns with the future electrification programme, recognising the benefits to lower net cost when planning renewals to be electrification ready. This will minimise disruption to passenger and freight customers and avoids abortive rework. We're a key stakeholder for the Rolling Programme of Decarbonisation and will work with the programme to explore opportunities to implement efficient electrification technologies, prioritising whole life cost efficiencies and sustainability.

Alignment to operations, maintenance, and enhancements

Our strategy recognises the condition of the assets, in particular overhead line equipment and 650V signalling feeder power supplies, presents significant maintenance challenges. To minimise impact, our Capex activities will be prioritised accordingly. In addition, the fitting of remote condition monitoring will reduce Opex costs through the ability for assets to be monitored remotely and proactive interventions initiated prior to failure.

The electrification and plant team will continue to work closely with the rolling programme of decarbonisation to quantify the additional maintenance requirements associated with introducing new electrification.

Innovation and technology enablers

We're implementing a 'predict and prevent' strategy. The availability of remote condition monitoring is a significant benefit to Scotland's Railway and we've championed innovation in this area throughout CP6, enabling us to make informed decisions on the selection and prioritisation of asset interventions. Remote management of infrastructure alarms supports reduced maintenance costs, improved asset performance, and workforce safety. The rollout of remote conditioning monitoring to key electrification and plant assets will continue in CP7.

Headline financials and outcomes

In facing trade-offs, due to financial challenges, we've developed an affordability-driven approach to renewals expenditure which will transition our workbank mix from more full renewals to a blend of renewals and life extending interventions. We'll focus our activities on the highest safety and performance priorities, to reduce costs in the next five-year period, resulting in an impact on overall asset condition.

We're planning additional mitigations to manage associated risk from potential asset failures, which can have significant impact on train service delivery. These include risk-based maintenance and inspection, remote condition monitoring, and workbank prioritisation.

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## Updates since interim Strategic Business Plan

The electrification and plant asset class was identified to have a significant impact on PPM and a risk of reduced CRAM performance score in CP7. As a result of the cross-asset prioritisation, it was identified an additional £9 million of targeted investment in signalling power supplies and overhead line equipment resilience could maintain the CRAM performance score at CP6 level and help improve performance across critical routes. In table 3.8, please note that transformational efficiencies will be allocated to this asset class at later stages.

Table 3.8: Electrification and plant – headline financial position, £ million

Headline summary	£ million
CP6 delivery plan 2019 (DP19)	73
CP6 exit forecast position	105
Initial submission	88
Interim Strategic Business Plan (pre-efficient)	81
Strategic Business Plan (pre-efficient)	90
Interim Strategic Business Plan	77
Strategic Business Plan	86

As shown in figure 3.26, by using our market-led approach we're distributing our investment across the network, to manage asset specific risks. The significant spend in the Glasgow North Electrics corridor is driven by signalling power feeder renewals and Mark 1 overhead line equipment renewals on the North Electrics line. The overhead line equipment renewals have been prioritised due to the age, risk of obsolescence, and condition of equipment. The signalling power assets are known to suffer from condition issues and have been prioritised due to the criticality of the North Electrics route. The reactive and minor renewals workbank is a significant spend because it involves a large volume of work, spanning across Scotland, which applies to multiple routes and therefore cannot accurately be disaggregated.

Figure 3.26: Electrification and plant – total spend by corridor, £ million (pre-efficient)

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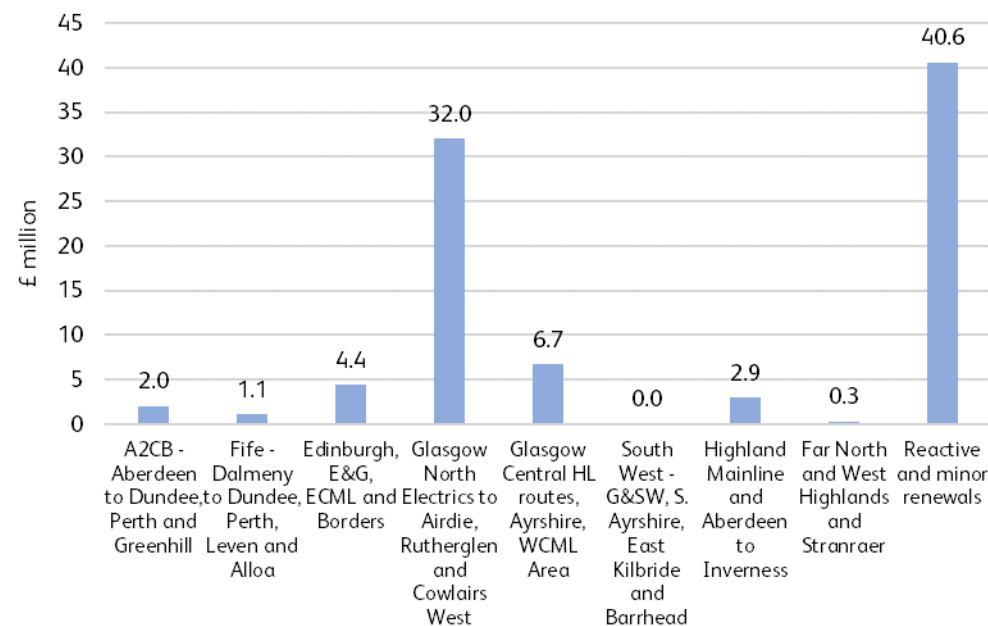
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Key risks and challenges

Figure 3.27: Electrification and plant – risk and mitigation

Asset	Key Risk	Risk Description and Mitigation
Mark 1 overhead line equipment	Obsolescence and asset condition	This variant of overhead line equipment is around 60 years old and at the point of its operational technical life. The equipment has known obsolescence, condition, and performance risks. We've adopted a risk-based maintenance approach, coupled with targeted minor renewals, to manage the assets. We'll also commence a programme of Mark 1 overhead line equipment full renewals in CP7.
Legacy 25kV distribution building and switchgear	Circuit breaker condition, building fabric, and obsolescence	Legacy metal-clad style 25kV distribution infrastructure is 40-50 years old. In CP6, asset performance has been impacted by deteriorating environmental conditions and limited availability of spares. In CP7, we propose to carry out targeted improvement works to sustain the condition of metal-clad building fabrics and surrounding compounds. The works will also include electrical re-wiring, fitment of permanent dehumidifiers and improvements to supervisory control and data acquisition (SCADA) systems.
Traction power	Capacity and growth of electric traction	It's recognised there are capacity concerns on both the West Coast Main Line and East Coast Main Line. There's currently a combination of fleet restrictions and operational controls implemented and we'll continue to collaborate with stakeholders to identify the appropriate long-term investment options to sustain a resilient power supply to these critical cross-border routes.
Signalling power	Feeder condition and aging infrastructure	Around 50% of the asset base is over 40 years old and suffering from declining condition. All signalling power feeders are monitored using remote condition monitoring and this allows us to utilise a proactive approach to maintenance and targeted minor renewals.

Historical performance

Figure 3.28: Electrification and plant – historical performance – service affecting failures

* Periods 1-11 only
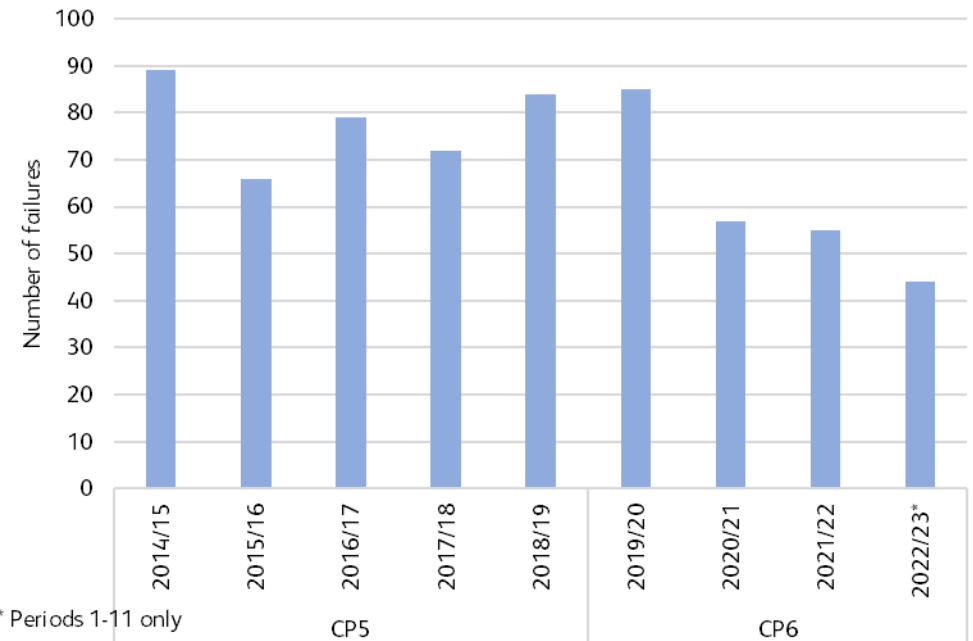
Overhead line equipment

Our application of risk-based maintenance, alongside investment in overhead line equipment renewals, has supported the positive trend in performance. To enable this to

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continue, the CP7 plan will invest in a combination of Capex interventions across the overhead line equipment asset base.

Traction power distribution

The AC traction power failures data contains both overhead line equipment and distribution faults. The distribution assets have continued to perform at a high level in CP6. The primary risk to performance is overload trips caused by excessive electric trains in a single feeding area.

Signalling power supplies

We've implemented an improvement plan for signalling power supplies since CP4, undertaking a combination of complete feeder renewals and targeted cable renewals. This has assisted the positive trend shown resulting in significantly improved performance and reduction in service affecting failures.

Fixed plant

The fixed plant assets have continued to perform at a high level through CP6. Low failure numbers have been assisted significantly by the implementation of remote condition monitoring, enabling proactive maintenance responses prior to the occurrence of equipment failures.

Long term asset challenges

Electrification and plant assets are expected to make a -0.6 % contribution towards our overall CSI in CP7. This forecast takes cognisance of the following long-term challenges affecting electrification and plant assets:

- Obsolescence presents an ongoing long-term challenge for our electrification and plant assets. We continue to manage obsolescence through the delivery of asset-specific renewal regimes, liaison with original equipment manufacturers and management of spares holdings. This approach is designed to reduce failure rates and enable timely renewals interventions that extend asset life

- A significant portion of electrification and plant equipment is approximately 40 to 60 years old. These assets are well known to suffer from degrading conditions due to age and being towards the endpoint of their operational life. The effective management of these assets is a key priority for mitigating risks

- Over time, the level of train service growth has impacted the remaining capacity and levels of resilience available on key routes, notably West Coast Main Line and East Coast Main Line. We'll continue to collaborate with stakeholders to identify the appropriate long-term investment options to sustain a resilient power supply to these critical cross-border routes.

Delivery

Our delivery model

Development of our delivery framework for CP7 will commence with the asset management team bought into the strategy at each stage and embedding the key criteria of a collaborative approach to partnership with the supply chain. A new overarching signalling, power, and communications framework is being put in place prior to the start of CP7, which will include electrification and plant, and will look to engage a key delivery supply chain partner and collaboratively support the electrification and plant CP7 business plan. This partner will be heavily involved in helping further develop scope and remits, with early contractor involvement, to enable delivery alignment across applicable projects.

We'll align with signalling and telecoms asset plans, in particular, to seek any packaging opportunities, utilising the proposed new multi-disciplinary framework. We'll work alongside the Integrated Planning Office to strategically integrate work and shape optimised disruptive access, considering net industry impact and cost.

Delivery risks

- Continued loss or change of resources (internal, external, and critical) resulting in a lack of continuity and disruption to delivery programme

- Ongoing global supply chain issues increasing risk to the delivery of material in line with programme requirements. We'll mitigate this where possible by buying in bulk and promoting early contractor involvement to define requirements.

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Efficiencies

We have a strong track record in achieving efficiencies and reducing our unit rates. In developing our CP7 plan we've challenged ourselves to extract additional efficiencies within our renewals portfolio. In electrification and plant, to date, we've identified efficiencies equating to £7 million. The key CP7 initiatives and themes include:

- Creating a new collaborative signalling, power, and communication framework to support alignment across assets and streamline touch points with the supply chain

- Delivering a stable, consistently phased, workbank which takes opportunities to bundle works by 'type' or geographically, aligned to line of route approach

- Material efficiencies related to early purchase, limiting inflation impacts

- Early purchase of materials to seek improved buying opportunities, reducing inflation impact and enabling on-time delivery of materials, avoiding project delays

- Enhancing internal delivery capability.

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3.3.8 Telecoms asset class strategy

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Customer experience, Digital connectivity agenda	3.19 (Customer Information Systems)

Telecoms provides the link between many of our critical assets, such as signalling systems, and electrification control systems, as well as providing both driver and lineside communications. The current trend for most technology is towards a networked state, with centralised control. Scotland's Railway has been at the forefront of this change during CP6, reducing the risk from poor condition copper-based communication assets in favour of fibre based, supporting the move towards electrification, as well as centralising systems such as our concentrator and voice recorders. Our strategy for telecoms in CP7 follows a similar pattern; further delivery of our voice strategy; reducing the cost of renewals, while delivering improved connectivity to signal boxes; and helping to simplify and reduce costs to future signalling schemes.

Other renewals, such as Long Line Public Address (LLPA) systems, also bring benefits where assets can be used to support station services, working with ScotRail Trains to bring track and train closer together and providing the opportunity to reduce the net cost of our railway to the taxpayer.

Our telecoms team are working closely with colleagues in our information technology and telecoms services (IT and TS – formerly Network Rail Telecoms, NRT) to direct, support, and guide the deployment of network elements they're renewing, aligning them where possible to our strategic corridors to reduce the overall cost of delivery.

Alignment to operations, maintenance, and enhancements

Our telecoms assets are logged into our telecoms Decision Support Tool (DST) and asset inventory database. These tools allow telecoms asset management to monitor, manage, and plan for maintenance and renewal of the entire asset portfolio. This helps highlight specific issues or trends that may arise through an asset's expected life cycle and prioritise necessary interventions. This enables us to maximise our asset life, and target maintenance on specific assets as required. Network monitored devices, such as routers and switches with no, or limited, changeable parts have had maintenance streamlined to a visual check, relying instead on the remote monitoring and alarm systems to identify issues.

CP7 planning has helped drive collaboration and opportunity across renewals. For telecoms, this particularly supports alignment with the signalling, power, and communications (SPC) workbanks.

Innovation and technology enablers

The Scotland Voice Strategy was introduced during CP5 and will conclude during CP7. This has proven to be a low cost means of modernising operational concentrator equipment, providing a shorter route to success on recontrols into the West of Scotland Signalling Centre and Edinburgh Signalling Centre. Working with information technology and telecoms services, we've developed a standardised 'Signal Box in a Box' solution, which should simplify design and reduce cost and time to design and deliver. The telecoms asset management team are investigating the use of battery monitoring equipment, which will provide improved monitoring of these assets and allow for improved renewal planning, reducing site visits and whole life costs.

Headline financials and outcome

In facing trade-offs, due to financial challenges, we've developed an affordability-driven approach to renewals expenditure, which will transition our workbank mix from more full renewals to a blend of renewals and life extending interventions. We'll focus our activities on the highest safety and performance priorities, to reduce costs in the next five-year period.

Telecoms is forecasting a marginal reduction in overall condition. In mitigation, we're planning to manage associated risk from potential asset failures, which can have significant impact on train service delivery. These include inspections and monitoring, and workbank prioritisation.

Updates since interim Strategic Business Plan

The telecoms renewals plan has been validated as sufficiently addressing safety and performance risks and has not been revised since the interim Strategic Business Plan. Please note that there is no CP6 delivery plan figure for telecoms because this was not developed to Scotland's Railway at DP19, and that transformational efficiencies will be allocated to this asset class at later stages.

Table 3.9: Telecoms – headline financial position, £ million

Headline summary	£ million
CP6 delivery plan 2019 (DP19) (in cash prices)	N/A
CP6 exit forecast position	39
Initial submission	41
Interim Strategic Business Plan (pre-efficient)	40
Strategic Business Plan (pre-efficient)	40
Interim Strategic Business Plan	36
Strategic Business Plan	36

As shown in Figure 3.29, by using our market-led approach we're distributing our investment across the network, to manage asset specific risks. Although a high percentage of telecoms renewals are discrete, there are some areas where alignment of programmes and spend bring benefits.

Figure 3.29 reflects a significant level of spend in reactive and route-wide, rather than spread across the corridors, as it cannot be disaggregated accurately. From the £22 million allocated to reactive and route wide, circa £11 million relates to works that are spread across multiple corridors – such as our Voice Strategy work and the Dunfermline Long Line Public Address (LLPA) – and the remaining £11 million comprises largely of planned minor works which includes targeted component renewals such as battery replacements.

Figure 3.29: Telecoms – total spend by corridor, £ million (pre-efficient)
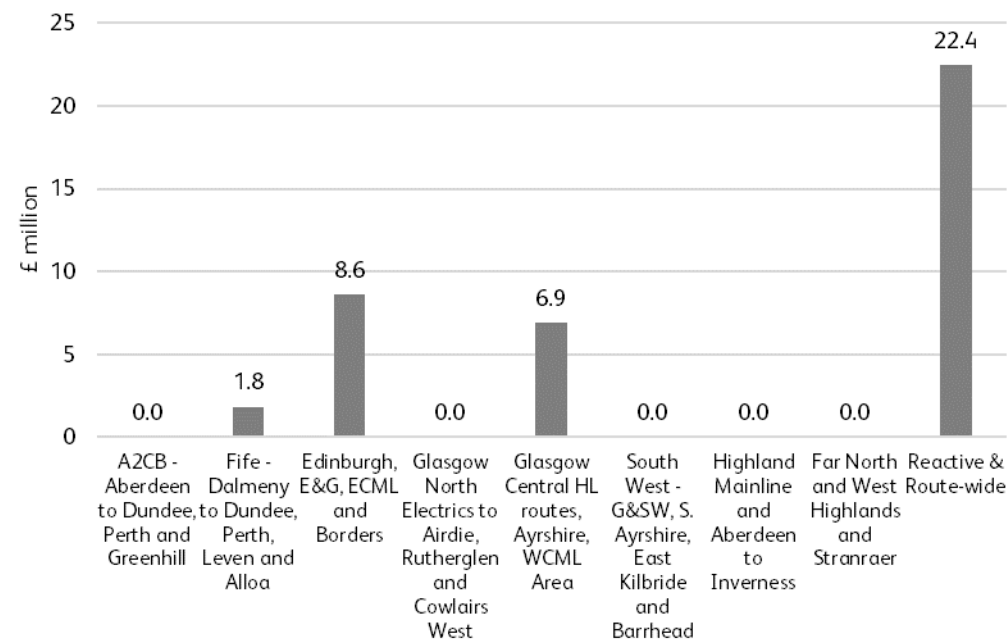
Key risks and challenges

Figure 3.30: telecoms – risk and mitigation

Asset	Key Risk	Risk Description and Mitigation
Network	Failure of asset	Currently there's a performance risk due to unprotected end of line connections. Although a centrally owned asset, the delay and impact reside with Scotland's Railway. We're working with information technology and telecoms services to install 'ring closures' that will protect the network and services on these links.
Supply Chain	Circuit Board Condition and Dated Equipment	The global supply chain for chips is impacting our network and assets due to a lead time of approximately nine months. By working with information technology and telecoms services team we're managing this delay through early forecasting and ordering of equipment where possible.
3rd Party Services	Plan to Review	Due to the planned 'sunset' of the BT Public Sector Telephone Network and analogue service estate in 2024 and 2025 we need to remove our reliance on these services resulting in a potential bow wave of work. We're focusing on mitigating any arising risks to the programme to maintain the critical schedule.

We'll continue to co-operate in providing opportunities for improved connectivity using our railway estate. Working collaboratively across Scotland's Railway, we'll be exploring opportunities to consolidate our telecoms systems and improve Wi-Fi bandwidth and station security services. We're currently trialling station service connectivity at Anderston station. We're also trialling, for wider delivery in CP7, working as a co-operative with lineside neighbours and local authorities to create an 'internet of things' data sandpit to inform our operations – and improve local decision making. This system uses our telecoms mast infrastructure to support local data networks to gather information from our neighbour's estates, sharing data such as localised weather information to better inform

all co-operative partners. Data security and cyber responsibilities will remain a critical consideration in any innovations that involve data sharing.

Under Signalling Scotland's Future, 'Connecting Scotland' is a key pillar to the line of route analysis. Further innovations and opportunities will be a key factor in determining how we create an environment for modal shift and provide improved facilities in line with other investments.

We'll employ reasonable endeavours to continue to work with ScotRail Trains and other operators to improve our Customer Information Systems (CIS). Utilising the "passenger information at railway stations study", commissioned by Transport Focus, an exercise was undertaken to support the establishment of the preferred Scotland's Railway Customer Information Systems (CIS) offering. With a target completion date of 2025, the programme of work forms part of our ongoing telecoms renewals.

Historical performance

Following the upgrade of the Global System for Mobile Communications-Railway (GSM-R) cab software in year 1 of CP6, service affecting failures have reduced and remained at a consistent level in the proceeding years. This reverses the rising trend experienced associated with GSM-R system failures in years 4 and 5 of CP5 and year 1 of CP6.

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Figure 3.31: Telecoms – historical performance – service affecting failures (SAF)

* Periods 1-11 only
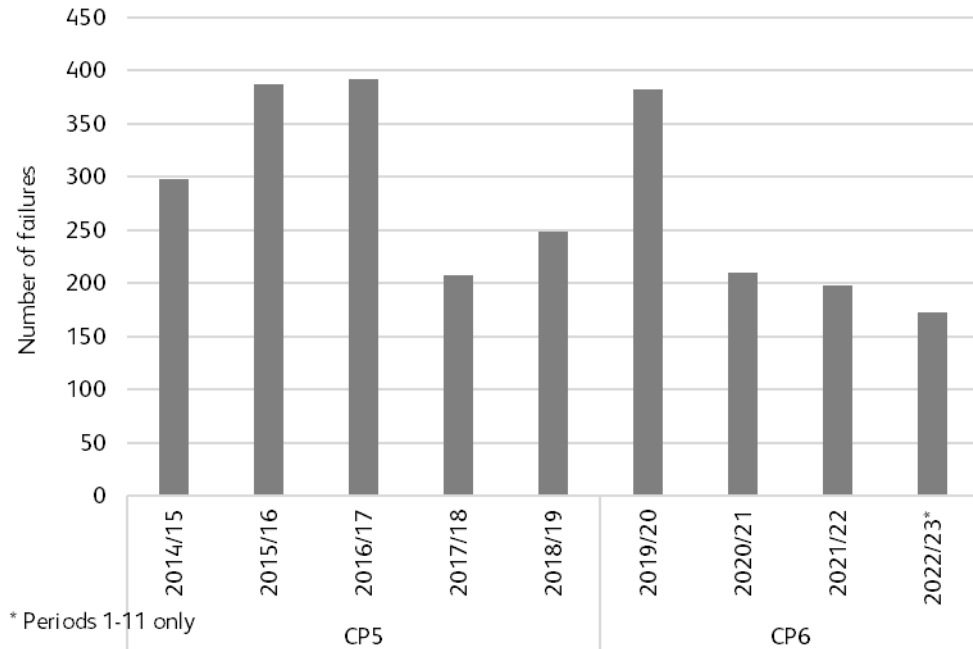
Long term asset challenges

Telecoms assets are expected to make a 0.0 % contribution towards our overall CSI in CP7. This forecast takes account of the following long-term challenges affecting telecommunications assets:

- The reliance on information technology and telecom services to undertake network design on Scotland's Railway projects is an ongoing challenge

- **Sub-surface station equipment** – there's a challenge that equipment installed in this environment does not tend to meet the designed asset life, due to the environmental conditions. Prioritisation of condition-based renewals will be informed by maintenance checks

- **Obsolescence** – the fast-moving telecommunications market means there are continual obsolescence risks associated with telecommunications network equipment. We'll continue to collaborate with telecoms services to identify and mitigate emerging risks

- **Security** – as we move towards a more networked asset base, the cyber and physical security risk increases. We'll continue to collaborate with telecoms services and evolve our security assurance. Cyber security monitoring will continue to be provided through the network by telecoms services

- **Trough Route** – Targeted trough route funding allows only for high priority localised repairs in CP7. Condition of troughing around Scotland's railway varies from excellent to poor. Our workbank will be prioritised on asset condition and lineside renewals projects will deliver trough renewals as required. These will be funded by the host projects.

Delivery

Our delivery model

We'll partner with the supply chain framework contractors and establish a rolling programme of work to provide a consistent level of delivery providing stability, and predictable delivery to Scotland's Railway. We'll seek the best way to deliver services that are depended on by several projects, so that projects are not negatively impacted by the reliance on others maintaining programme.

Delivery risks

- Reliance on information technology and telecoms services for design and delivery will require a detailed capability and capacity assessment prior to internal awards. Early engagement of information technology and telecoms services, with early provision of prerequisite information, will assist resource allocation

- Loss of specialist resources (internal, external, and critical) leading to discontinuity and disruption to projects. Strategic partnerships with the supply chain are planned to allow suppliers to draw on a larger pool of resources. Having a spread of capabilities across the signalling, power, and communications

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portfolio will help build system knowledge across the supply chain, leading to improved delivery

- Ongoing global supply chain issues increase risk to delivery of equipment, such as routers, in-line with programme requirements. In mitigation, we plan to work with information technology and telecoms services, leveraging opportunities to reduce the delay in ordering equipment, as well as releasing funds earlier in the project life cycle to purchase equipment

- Changes in projects, scope, and funding leads to delivery uncertainty and inefficiency. A stable workbank, and delivery plan, aligned with the contracting strategy of strategic partnering, will enable continuity of delivery across the control period.

Efficiencies

We have a strong track record in achieving efficiencies and reducing our unit rates. In developing our CP7 plan we've tested ourselves to extract additional efficiencies within our renewals portfolio. In telecoms, to date, we've identified efficiencies equating to £4 million. The key CP7 initiatives and themes include:

- Creating a new collaborative signalling, power, and communications framework to support alignment across assets and reduce touch points with supply chain

- Stable workbanks are consistently phased, with coherent geographic and work type bundling (aligned to line of route approach)

- Material efficiencies related to early purchase, to avoid future inflation impacts

- Early purchase of materials to deliver improved buying opportunities, reduce inflation impacts, and allow materials to arrive when they're needed – avoiding project delay

- Increased internal delivery capability.

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3.4 Climate Ready Plan for Scotland's Railway

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Weather Resilience and Climate Change Adaptation (WRCCA) strategy	3.37 (weather resilience), 3.41 (provision for weather resilience)

Scotland's climate is changing. It's warmer than it once was, rainfall patterns are more unpredictable and certain weather extremes are becoming more severe and occurring more frequently. This introduces climate-related impacts on our railway that need action to provide a safe and reliable service for our passengers and freight customers.

A **Climate Ready Plan for Scotland's Railway** (2024-2029), that brings together our Weather Resilience and Climate Change Adaptation Plan with ScotRail Trains Climate Change Adaptation Plan, has been developed. The plan sets out the actions we'll take during CP7 to improve the resilience of our railway against physical changes in our climate. It contains two key workstreams:

1. **Climate Ready Assets –** this workstream covers direct intervention on our infrastructure assets to improve their resilience against weather and climate-related impacts. Activities are generally undertaken for another factor (i.e., improving the condition of asset), with incremental climate resilience accrued in the process. For example, in the renewal of drainage assets their capacity can be increased to handle increased volumes of water.

2. **Climate Ready Intelligence** – this workstream covers the actions we'll take to enhance the internal climate science and adaptation capabilities we need to make well-evidenced, appropriate adaptation decisions. For example, this includes expanding the scope of, and making improvements to, our physical climate change risk assessment processes, and the development of a longer-term climate change adaptation strategy.

In addition to the two key workstreams listed, additional actions are being undertaken to deliver action plans associated with the recommendations made after the tragic accident

at Carmont. These action plans are being delivered directly by Scotland's **Weather Risk Taskforce**. Activities include the rolling out of more remote condition monitoring on earthwork assets and increased people resource for inspections and maintenance of drainage assets. In table 3.10, the Opex costs relation to the Weather Risk Taskforce are captured in the Maintenance budgets.

Table 3.10: Weather and climate resilience funding sources, £ million

Climate Ready Plan Financials	£ million
Assets (core asset plans funding)	**433.5**
Buildings	10.1
Earthworks	113.3
Electrification and plant	21.6
Drainage and lineside	100.3
Signalling	45.3
Structures	43.0
Track	99.9
Intelligence	**4.0**
Climate risk assessment enhancements and expansion	4.0
Adaptation pathways and strategy development	
Weather Risk Taskforce	**58.3**
Capex (included in earthworks and drainage core plans)	22.4
Opex	35.9
Total	**495.8**

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3.5 Other capital expenditure

Note that part of this section addresses our safety obligations as set out in items 12-16 of the Secretary of State for Transport's HLOS requirements.

Scope

The purpose of this section is to set out our plan for a number of areas that are traditionally classified as 'other renewals', covering renewals activity and capital expenditure not related to our core infrastructure asset base. We also highlight any areas where we've identified an opportunity to reduce cost, and the associated impacts.

As a business we have a number of other important areas of renewal activity and capital expenditure which collectively support Transport Scotland's six strategic priorities and are critical dependencies for other areas of our plan. Our initial plan is based on a number of programmes in place in CP6, such as our Safety Taskforce, Intelligent Infrastructure, safer and faster electrical isolation equipment and research development and innovation. It also reflects areas of increased focus and priority, such as environmental sustainability and begins to address the industry challenge of climate change adaptation.

Financial position

Table 3.11: Summary of other investment priorities in our submission, £ million

£ million (2023/24 prices)	CP6	CP7	CP7 vs. CP6
Safety and Security	16	19	+3
Electrical Safety Delivery	0	28	+28
Plant	22	18	-4
Environmental sustainability	0	19	+19
Property	18	17	-1
Offices and Accommodation	0	24	+24
Total	**56**	**126**	**+70**
Transformational efficiencies	0	-58	-58
Total including transformational efficiencies	**56**	**68**	**+12**

The Electrical Safety Delivery programme has been funded through network-wide functions during CP6. An additional £10 million will be funded via Route Services in CP7. Transformational efficiencies have been applied to Other Renewals for the purposes of the financial modelling. The efficiency programme is set out in Section 4.2.

Safety and security

We're learning from tragic events in CP6 and are putting in place measures to improve safety performance. Our safety task force was formed to tackle near misses on track between colleagues and trains. We're addressing the findings of the Weather Risk Task Force reviews that were commissioned in response to the tragic loss of three lives as a result of a derailment at Carmont in August 2020 and confirmed in Rail Accident Investigation Branch's March 2022 report. We've also launched our safety framework across the company, which focuses on locally led improvements, driven within a central compelling vision of 'Everyone Home Safe Everyday'.

Significant progress has been made in CP6, so far, but more remains to be done. Key to CP7 will be the implementation of our safety framework, which will drive safety improvement through a compelling vision, network-wide and local plans, and strong governance to create local ownership, promote best practice, and drive continuous improvement.

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In addition to focusing on key risk areas such as earthworks and drainage systems to provide weather resilience, our submission includes a number of other initiatives to support continuous improvement of safety from CP6 exit levels relating to passenger, public and workforce safety. We'll continue to deliver our level crossings risk controls to improve level crossing safety and take steps to reduce suicide and trespass; tackling causes of serious events that can impact those interacting with our infrastructure as well as delivering a reliable train service.

Our submission includes £10 million capital investment to continue the success of our safety taskforce (reducing risk to our workforce) as well as initiatives to deliver against the security strategy, policy, and standards.

Our plan proposes continuing our multi-control period programme to improve the safety of working on or near our high-voltage power systems through better user of technology and improvement of our safety critical processes. The Electrical Safety Delivery programme comprises a significant proportion of safety investment (£38 million) for Scotland's Railway. The £38 million comprises of £28 million in our plan plus an additional £10 million funded via Route Services in CP7. The objective of the Electrical Safety Delivery programme is to demonstrate increased compliance to the Electricity at Work Regulations 1989 (EaWR) and deliver improved electrical and workforce safety performance, creating a safer and more efficient railway.

The Electrical Safety Delivery programme comprises technology, culture, and process workstreams, prioritised through gap analysis across Network Rail and the wider electrical supply industry. Electrical Safety Delivery workstreams will deliver to the industry the safest available tools and technology, and will transform our processes and standards. In addition to electrical safety benefits, Electrical Safety Delivery workstreams will also enable track worker safety improvements and offer efficiency opportunities due to reducing the time associated with applying an overhead line isolation.

Like all network-wide function cost allocations discussed across this document, Scotland's Railway will take a benefits-led approach, which will enable refinement of our investment proposals throughout CP7.

Our submission also includes other initiatives driven by Network Rail's Technical Authority such as the Occupational Health Programme, and the System Operator Freight Safety Improvement Portfolio (FSIP), which will deliver critical safety-related improvements emerging from incident investigations as well as recommendations from industry safety groups.

Our submission also includes £9 million to take forward important security initiatives in CP7. These include:

- Upgrades at our critical national infrastructure level one and level two sites, and at our Major Stations

- Designing out crime initiatives

- Route crime prevention

- Implementation of new technical security control

- Upgrades to cyber systems based on new regulations

- Security communications, culture, and competence programmes.

Security is core to our culture and embedded in everything that we do. Every new development or change is considered an opportunity to review and, where necessary, improve railway security.

Environmental sustainability

We have a number of long-term environmental goals such as net zero emissions by 2045 and increasing biodiversity. In CP7 we're focusing on a small number of the most important goals given the financial challenges. We plan to invest a total of £26 million, as shown in table 3.28, £19 million of this cost relates to Capex with the remaining £7 million attributed to Opex:

- The main initiative is in relation to decarbonisation and allows us to continue the transition process for our own vehicle fleet to be zero emissions

- We'll also support decarbonisation by purchasing electricity from renewable sources to power our non-traction activity, and some targeted improvements in our building energy efficiency

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- Finally, we'll provide support to biodiversity along the line through the way that we manage invasive non-native species.

Given this targeted approach there are a number of projects that we'll not be progressing, in CP7, at the pace we once intended to. These include some habitat formation improvements to aid biodiversity, and a number of renewables and energy efficiency schemes for decarbonisation. We will, however, aim to progress our longer list of possible initiatives by exploring collaborative arrangements and aim to access other sources of funding. For example, we're progressing some key knowledge and capacity building activities related to climate change adaptation, funded separately to the activities listed here. These were included in the Section 3.4 dealing on weather resilience.

Plant

Building on CP6, our priorities for our investment in plant in CP7:

- Increasing reliability and performance of the network in line with putting passengers first and maximise possession times for worksite and activities undertaken using On Track Plant

- Reducing Opex spend on maintaining specialist On Track Plant by replacing older vehicles

- Providing the latest ergonomic and safety features on modern On Track Plant and equipment

- Enhanced digital information available to download on demand in the event of an incident/accident, via fleet management system.

Property

During CP6, we've changed the way we manage our property assets. We've devolved property from a national function to a mostly devolved model, as part of our Putting Passengers and Freight First programme. In September 2020, more of our property assets were devolved to be managed by Scotland's Railway including the delivery of renewals on both revenue generating and non-revenue generating assets. Our submission includes £17 million, over two distinct areas:

Revenue generating

These are investments in property assets for the purpose of generating additional commercial income. Until CP6 these were classed as enhancements, and they're ringfenced internally. The vast majority of schemes fall within managed stations, although there is spend in other areas. Examples of typical schemes include:

- Converting surplus operational space in a managed station to retail use

- Upgrading traditional fixed advertising panels to digital.

Revenue generating schemes have historically generated an average Return on Investment (RoI) of circa 10%. These revenue generating renewals also aim to improve the passenger experience at our managed stations.

Non-revenue generating

These are the replacement of life-expired non-revenue generating assets, for example, rebuilding a retaining wall at a freight site.

Offices and accommodation

Associated costs to address the legal, safety, and operational issues within our Maintenance Delivery Unit's and signalling centres. We've developed a prioritised plan for investment based around the following approach:

- The condition of our operational accommodation is a long-standing issue impacting operations, morale and staff engagement. Therefore, it is an important factor in delivering effectively and efficiently

- Surveys of all our operational accommodation were therefore undertaken to better understand the baseline condition. Works required and high levels cost estimates were identified to address the issues at each location

- Prior to the surveys being undertaken, meetings were held with operational managers and Infrastructure Maintenance Delivery Managers, to quantify the challenges associated with each location. We now have a comprehensive record of our occupation at each location, which was essential for developing an overall strategy. Whilst the investments we plan to make will only address the most

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pressing accommodation priorities we face, it's an important step in supporting our frontline workforce.

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3.6 Maintenance

Scope

We deliver maintenance across the 2,800 miles of track, as well as the rest of our network which includes the hundreds of bridges, tunnels, telecoms, signals, power supply systems, level crossings, stations, operational buildings, vegetation and fencing. We undertake inspections visually, as well using remote monitoring systems. We carry out preventative and reactive maintenance on a 24/7 basis – all to keep the railway safe, support a reliable train service, and comply with legal and other obligations.

Scotland's Railway is accountable for the planning and delivery of maintenance activities, establishing decision-making criteria for asset maintenance prioritisation, and managing data and information to measure maintenance performance. This activity is supported by Network Rail's Technical Authority, which has responsibility for developing the processes, standards and procedures, decision-support tools, and monitoring technology for maintenance.

Maintenance activities are delivered in a number of different ways, depending on the asset type. The majority of railway specific tasks, which require specialist railway related competence, are undertaken using in-house direct labour resources. Where efficiencies can be gained, or advantage taken of a competitive marketplace, work is outsourced to our supply chain. Examples of outsourced maintenance activities include civil engineering inspection, building inspection, facilities management, helicopter operations and large-scale vegetation management.

Priorities for CP7

We'll focus on reducing system, health and safety, wellbeing, and environmental risks to as low as reasonably possible, whilst maintaining reliability through the application of risk-based maintenance.

We'll assure that all maintenance activity on our assets is compliant with relevant and current legislative, regulatory, and statutory requirements as well as technical standards. Our maintenance regime will be optimised to improve asset availability and to deliver a safe and reliable railway.

We'll work collaboratively with our stakeholders so that maintenance work is done at the right time, and we'll deploy the right number of people with the right skills to complete each task to provide a safe and high performing infrastructure for our passenger and freight customers.

We'll have a relentless focus on capturing, analysing, and exploiting asset data to make better decisions about when to maintain assets effectively and efficiently.

Our Strategic Business Plan prioritises safety and performance over sustaining asset condition and remaining life. This presents a marginal risk to asset performance, which we'll mitigate through additional maintenance activities including pre-emptive maintenance inspections, holding works, and harnessing technologies such as remote condition monitoring.

Delivery models will be continuously reviewed during CP7.

Modernising maintenance: this programme will be delivered through the remainder of CP6. The programme is intended to support doing the work in the future that we most need – the right work at the right time. There are opportunities to stop tasks, extend frequencies, or deliver activities remotely or automatically, without reducing overall system safety or adversely impacting network performance.

Part of this involves applying greater knowledge and insights on risk to variations to the frequency of interventions. Our current practices are predominantly based on historic time-based intervals and our work will gradually move these to a semi-predictive, risk-based approach whilst maintaining reliability at appropriate levels through the application of risk-based maintenance.

Deployment of the Intelligent Infrastructure programme: this programme is supporting the improvement of maintenance capabilities through two key workstreams:

- Developing, where possible, enhanced asset condition monitoring and analytics, with associated systems, standards, and processes. This will help us understand the probability of asset failure, predict when failure may occur, forecast impacts on the operational railway, and plan interventions prior to disruption of train services

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- Developing tools to optimise Opex efficiencies in CP7, including increasing maintenance planning capability and providing frameworks and tools to optimise cost, time, and quality of maintenance delivery.

Research development and innovation initiatives: we have a number of inflight projects and programmes of work aimed at integrating new initiatives into modern working practices and, where applicable, standards for a number of areas across the asset base. These projects will deliver efficiency and performance benefits over the remainder of CP6 and beyond.

Overall, these changes put us in a strong position as we move forward into CP7 and deliver maintenance activities more efficiently. These savings are slightly offset by additional scope for CP7, most notably in relation to weather resilience and climate change, the management of ash dieback, and maintenance activities to support additional assets delivered through recent enhancements. Each of these areas is discussed below.

CP7 expenditure on weather resilience and climate change adaptation

Following the tragic loss of three lives as a result of the accident at Carmont on 12 August 2020, Network Rail commissioned two independent task forces:

- Lord Robert Mair considered how Network Rail can better manage its earthworks (cutting and embankments) portfolio and improve our understanding and response to severe weather events. Dame Julia Slingo considered how Network Rail should procure its weather services and keep abreast of the latest developments so that we benefit more immediately from advances in science and technology

- The industry also completed a network-wide review of the impact of climate change on the resilience and safe performance of the railway and, in particular, how earthworks are managed. The outputs were shared in the Resilience of Rail Infrastructure report

- The Resilience of Rail Infrastructure report, alongside the two taskforce reviews (earthworks management taskforce and weather advisory taskforce), have shown that the challenge of climate change on the railway is substantial. Most earthworks alongside the tracks were built around 150 years ago and were poorly engineered, by modern standards. Some of these are overly steep and unstable with drainage of a similar age, and installed to a pre-set design, regardless of location. When combined with heavier rainfall, as has been experienced in recent years, landslips and flooding can occur.

The reviews recognised it's not practical to rebuild nearly 35,000 separate slopes alongside 3,500 miles of lineside across Scotland's Railway. They recognise the work that's been done to upgrade the Victorian infrastructure, where possible, and manage risk across the network. Investment in resilience work has almost doubled in the past decade, and new systems, technology, standards, and practices have been introduced or updated. The reports also note that this work has accelerated further since the summer of 2020, with trials of new technology being rolled out more widely across the network and new dynamic, route-based weather forecasts, using the latest science, trialled in cooperation with the Met Office.

However, while acknowledging the significant amount of work being undertaken, the reports show that there's more that can be done and offered over 50 recommendations for Network Rail to consider in detail.

All recommendations from the reports have been analysed, with some already implemented. Many of the recommendations focused on the considerable progress that's been made with regards to technology over recent years, bringing Network Rail up to speed. Some technology has been trialled, including a system to provide detailed information on where intense, short-term rain is falling and monitoring sensors that can be adopted to potentially detect failure of critical slopes early on – but the reports are clear that advancements happen quickly and more can be done to keep on top of latest developments.

Crucially, both taskforce reports recommend looking at:

- Culture and organisational change

- Upskilling the workforce to better access, interpret, and use weather data and technology

- Carry out inspections and examinations of earthworks and drainage

- Improve knowledge and competencies consistently across the organisation.

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Other recommendations include:

- Carrying out detailed analysis of previous slope failures and washouts, together with accompanying weather patterns and ground conditions

- Accelerating the deployment of state-of-the-art weather forecasting capabilities through digital platforms

- Proactively reviewing and maintaining earthworks and drainage and consider having dedicated teams to do this

- Using helicopters and drones more widely for inspections, particularly after intense rainfall.

Our submission includes £16 million Opex expenditure to enable us to continue to improve our internal capability in CP7, in particular, through dedicated earthworks and drainage teams and operational weather expertise, which were key recommendations from the Weather Risk Task Force.

CP7 spend on Environmental Sustainability, Weather Resilience, and Climate Change Adaptation is split across Opex and Capex, which includes a proportion of the asset spend investment within other capital expenditure and within Opex such as the Weather Risk Task Force action plans.

Vegetation management

Scotland's Railway is developing an updated vegetation strategy for CP7. This strategy aims to provide a lineside environment that reduces risk and fits our biodiversity agenda, within the funding envelope.

Interventions throughout CP7 will be targeted based on route criticality and the risk profile of each line of route. This will consider hazardous trees, overhead line equipment issues, autumn issues and encroachment. Our strategy will also focus on train service delivery. We'll continue to work towards gaining compliance with the lineside vegetation profile in our standards.

Vegetation clearance should have an overall positive impact on maintenance activities with less reactive maintenance required. There will be an increased requirement for cyclical maintenance to keep vegetation at a manageable level. Management of hazardous trees will continue to require intensive maintenance focus.

Vegetation clearance should have a positive impact on operational activity with a reduction in Overhead Line Equipment trips, signal sighting issues, and tree strikes. Work at problem leaf-fall sites will reduce operational burden during autumn. Risk mitigation during adverse weather will have a modest increase in operations activity through imposition of targeted speed restrictions.

Ash dieback

Only ten years after its official identification in the UK, ash dieback has already started having significant impacts on the country's treescape. The risks that dead and diseased ash trees pose to human health and safety, together with significant economic and environmental impacts, mean that it's vital to accept that ash dieback cannot be treated as business-as-usual.

Ash dieback will lead to the decline and death of the majority of ash trees in Britain. Ash dieback has spread around Britain and in 2020 a survey was compiled of 10 km square areas which found ash dieback present in 73% of England, 92% of Wales, and 21% of Scotland areas.

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Figure 3.32: Relative profile of ash mortality per year, Great Britain
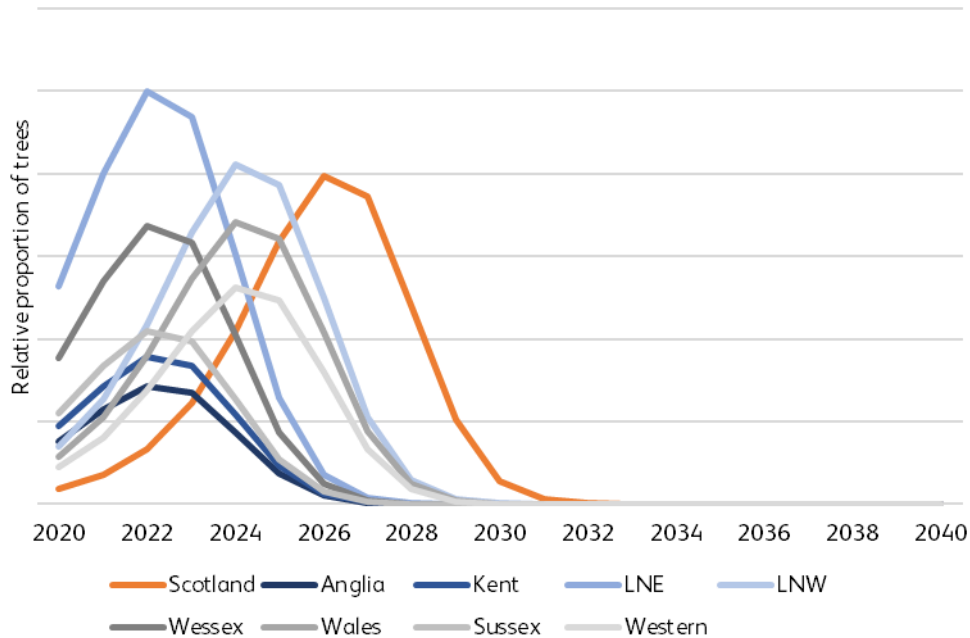
Note: Analysis is based on modelling undertaken in 2020 and hasn't been tested against more recent observations. Therefore, as with all modelling, actual position may differ from that shown.

Research undertaken by subject matter experts suggests that the death rates nationally are estimated to be between 5 to 20%, depending on sites and spore load. A rapid increase in mortality rates is expected over the next six years, which may then rise to an average of 50 to 70%. The precise speed of decline of any individual tree is currently impossible to predict and will be influenced by other factors, including soil type and topography.

Scotland's Railway cannot afford to be passive and let ash dieback run its course without careful thought, vision, and proactive intervention. Communication, collaboration, and active engagement with local communities will be key to the success of managing ash dieback.

Network Rail (across the entire GB network) has an estimated three million ash trees adjacent to the rail network and around 400,000 mature trees in high-risk areas (where trees can fall onto the track) that require management.

One significant challenge facing Scotland's Railway is predicting where trees will fall, which only adds to the need to proactively manage our dead, dying, or diseased trees in the high-risk areas. With new technology to be released with digitised lineside inspections, we'll be able to see where these are and work on proactive removal.

Our plan for CP7 includes £23 million for works associated with ash dieback and includes cost estimates for a variety of eventualities, such as day work for arborist teams and protection teams, arborist teams and possession staff (both midweek and weekend), and emergency 'tree on the line' teams.

Financial position

Our submission includes £1,045 million of maintenance expenditure across CP7. This is made up of direct maintenance expenditure, with the remainder in Network Rail's Route Services and Group functions. The direct CP7 maintenance planned expenditure is further broken down and £740 million will be delivered through our four delivery units. Key changes in the drivers between the two control periods which are discussed below.

Table 3.12: Maintenance - headline financial position, £ million

Headline summary	£ million
CP6 exit forecast position	1,019
Strategic Business Plan (pre-efficient)	1,126
Strategic Business Plan	1,045

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Cost components

Direct maintenance:

Our Strategic Business Plan spend is based on bottom-up planned maintenance volumes and rates, with some key inclusions and exclusions accounted for. These volumes and rates will continue to be iterated for final Strategic Business Plan. This is including £740 million of delivery unit spend for core maintenance activity, including key movements noted below:

- £35 million (5% of our overall maintenance costs) in CP7 to mitigate against the impact of an affordability-based renewals portfolio, informed by insight from our Technical Authority

- £16 million is included within the plan to address the maintenance of additional drainage assets within our portfolio

- £7 million has been dedicated to enhancing our talent pool of future leaders through graduate and apprenticeship schemes in CP7

- £5 million is included for additional resources to help maintain additional electrification and plant assets that will come online throughout CP7 as part of Phase 1 of the decarbonisation programme, contributing to our Net Zero commitments

- £2 million for ongoing costs for safe system of work equipment

- Removal of £17 million of COVID-19 costs incurred in CP6

- Delivery of other efficiencies for direct maintenance of £25 million (explained in next section).

Other main maintenance costs include:

- Civil Examination Framework Agreement and Civil Assessment Framework Agreement inspections

- Additional de-vegetation work

- Reactive maintenance

- Helicopter/aerial surveys.

Additional budget provision has been made for increased civil engineering.

Efficiencies and headwinds

Headwinds of £24 million have been included within the plan, this is to account for input prices and other fluctuations.

The maintenance plan includes benefits from the modernising maintenance programme that is set to be implemented by the end of CP6. We expect that this will bring £33 million of benefits which are included in our baseline spending estimates.

In developing our CP7 plan, we've tested our ability to deliver additional efficiencies within our maintenance function. We've identified further efficiencies for direct maintenance equating to £25 million. The key CP7 initiatives and themes include:

- Risk-based maintenance
- Vegetation management

- Access

- Incident response.

Alignment to renewals and enhancements

Our decision making will be data-driven and based on an integrated approach which balances whole life costs and risk and performance, in line with overarching asset management objectives. Maintenance will be delivered using appropriate resources, the right people with the right skills, and appropriate tools and competencies.

Maintenance will be delivered utilising Modernising Maintenance principles which will allow staff to be utilised more effectively across disciplines while maintaining assets using risk-based maintenance principles where standards allow.

We'll continue to align our maintenance plan with proposed renewals activity. An increase in maintenance requirements is included as a consequence of an affordability-

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based plan for renewals. This may be holding works to mitigate delayed renewal or reactive maintenance activities in response to asset failures. Additional budget provision has been included in the plan and we'll continue to develop these activities ahead of production of our delivery plan.

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3.7 Operations

Scope

Operations expenditure covers the diverse range of signalling, electrical control, mobile operations, and station functions required to keep the railway moving. Operations is at the core of what we deliver, day in, day out, and where all the varied parts of the industry come together to deliver for our customers, running around 2,000 passenger and freight services across the network each day. Operations is crucially about people – and people who require an increasingly diverse range of skills to meet changing needs.

Together with the wider industry, we've developed over the course of the last two years a collection of strategies to keep improving and developing operations and the diverse range of operators across the industry. These strategies form the basis for how we're developing operations through the remainder of CP6 and then through CP7, recognising the industry interdependencies, and transforming how we deliver for customers.

The first part of the strategy focused on operations training and development, the review of command-and-control structures, and the operations leadership of systems and projects. The second part focused on the broader industry and outlined a series of recommendations on how to better enable operational teams to deliver an improved train service across the industry.

Overview

Our operations workforce is spread throughout Scotland, across a range of technologies and operating environments. To operate the network, we currently employ:

- 588 signallers across the network

- 84 Network Rail station staff – covering security, customer service, and management

- 47 mobile operations managers – key response staff who lead our response to incidents

- 56 controllers – oversee the delivery of the network

- 23 electrical controllers – manager the power supply to our electrified railway.

These colleagues are all based in our teams across Scotland's Railway. This comes together to form costs of £304 million for CP7.

Priorities for CP7

This strategy is aligned with the objective of better enabling our railway operational teams to deliver train services for the benefit of our customers, and to grow and develop skilful and effective railway-operating people. Our Network Operation Strategies set out to develop themes and actions and to enable the operational workforce to be equipped for real-time operational delivery. The strategies also aim to transform the operation functions of the railway to deliver better future outcomes across three priority areas:

People: in CP7 we'll continue to transform the approach to competence management for front line colleagues. The deployment of the new competence management tool, RailSmart Employee Development System (EDS), will continue to grow and develop, as the organisation builds towards signaller licencing. This will contribute to developing broader operations careers across both Scotland's Railway and the industry, with more readily identifiable operations career pathways and transferable skills.

Change/Technology: in CP7 the operations team will have access to training technologies to transform staff development. This work will include virtual reality and replica signalling technologies, highlighting the revised operation models required to maximise the benefits of new systems and operating platforms. The operation of the network will build upon developments in the network model to enable a far greater understanding of how the network is operating and enhancing the predictability of how the railway is going to perform.

Process: process changes to support transformed operations in CP7, and in turn customer outcomes, will include:

- The utilisation of the enhanced GSM-R capabilities to communicate with customers

- Increasingly risk-based approaches to operations competence and incident management

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- Recruiting the right people and working proactively with trade union colleagues to collaborate on the operators of the future.

Signalling Scotland's future: The development of the Signalling Scotland's Future strategy will include a workstream relating to a Control Centre and Operations plan. This plan laid out the consolidation of manual signalling locations into Control Centres. The plan links asset condition driven renewals with opportunities to reduce the cost of signalling operations. This plan also links to other major signalling interventions (i.e. enhancements) that offer opportunities for migration. In addition, the Luminate Traffic Management system will be considered wider roll-out on the network. Whilst Luminate will offer a significant improvement in the management of operational incidents, we'll attempt to leverage the full capabilities of the system by working with all Train Operating Companies to better manage crew and stock movements.

Electrical control operations: The decarbonisation programme will increase the extent of electrification in Scotland. Our operations plans will consider the impact of this new infrastructure and we'll increase our electrical control room operator resource accordingly. This growth may also necessitate an expansion of the electrical control capacity within Scotland, subject to costings and final business case approval.

Operations is central to delivering a more joined-up approach to how we run the railway for the benefit of passengers and freight users. Operations knowledge and experience is central to this and in creating a workforce and leadership teams who operate the network. Acting quickly is essential to sustain and drive forward the value that rail offers to the economy and society, whilst restoring confidence and improved customer delivery.

National 21ˢᵗ Century Operations Programme: The delivery of the Network Operating Strategy priorities and continuous improvement for the operations community is co-ordinated through the 21ˢᵗ Century Operations Programme.

Throughout CP6 this has included: early development of signaller licencing, updated signaller licencing, updated Signaller Competency Framework, trialled new operating models to meet changing needs in a number of routes together with initiating the roll out of new roles, as well as crucially implementing a new IT system to manage signaller competency.

In CP7 the programme will continue to co-ordinate the development of the operations capability across Scotland's Railway by aiming to deliver several workstreams to tackle the below key strategic themes:

Safety and Train Service Delivery

- By better training through our Operations Capability Programme, we can enable safe operations, leading to a better performing and safer railway
- Signaller recruitment, training, and development will allow our signallers to train and improve to deliver better for customers.

Efficiency and people

- So that operations remain safe and efficient, we'll optimise our staffing levels so that the reliance upon overtime is minimised. This will require that the CP6 run rate of vacancies gaps reduces from 10 % to 5 % throughout CP7. We aim to deliver this by introducing an innovative strategy to proactively manage staff demographics and movement between operational locations.

- In addition, during CP7, Scotland's Railway will consider the creation of its own in-house training programme for signalling staff. This will allow us to better support and work collaboratively with local communities to create sustainable, localised employment opportunities
- Operations remains focused on embedding a strategic programme of development and coaching. In addition to continuing with innovative schemes such as the Saltire Initiative and our on-house graduate programme, CP7 will see the introduction of an Operations Apprentice Scheme supporting grass roots talent into frontline operational roles.

CP7 will see continued focus on unlocking the potential of operations through risk-based and locally appropriate standards and processes to best reflect the needs of the geographies and communities we serve.

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Financial position

The costs for CP7 are broadly consistent with those for CP6. Key movements for CP7 include an extra £3 million for salary re-grading initiatives and removal of £6 million of COVID-19 related costs incurred in CP6.

Table 3.13: Operations - headline financial position, £ million

Headline summary	Actual, £ million
CP6 exit forecast position	354
Strategic Business Plan (pre-efficient)	413
Strategic Business Plan	419

Cost components

Our operations planned spend for the Strategic Business Plan is £304 million. 95 % of this cost relates to the people who operate Scotland's Railway. In addition, a further £115 million is included within Operations which covers our safety, performance, customers, and communities and control teams, who help support the running of the railway. This also includes additional proposed expenditure in relation to a number of areas within performance, health and safety, and a number of other initiatives.

3.8 ScotRail Trains Performance

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Network Rail train performance, Train Operating Company performance	3.7, 3.8

Throughout Section 3.8, we refer to Scotland's Railway as the Scotland region of Network Rail.

Overview of our performance history

The industry's PPM performance across CP5 and CP6 highlights that PPM has consistently been between 87-91 % over the past nine years. It peaked in 2020/21 as a result of the drop in passenger and service numbers due to COVID-19; this was the only year that we've achieved the 92.5 % PPM target.

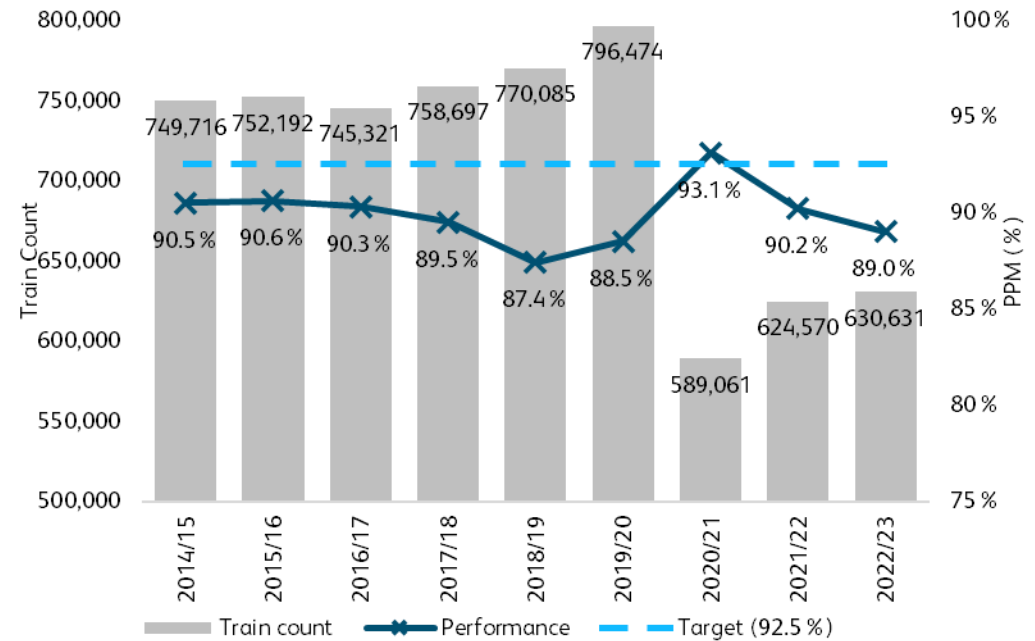**Figure 3.33 PPM performance and train count since CP5**

Figure 3.3 is from Scotland's Railway, based on the Mapped Delays – PPM Failures Dashboard from 19 April 2023.

There have been several developments and performance trends over recent years which impact PPM performance. These include:

- **Removal of 'skip-stopping'**. Skip-stopping is where services do not make scheduled stops in order to make up late running of a train. Skip-stopping has an adverse impact on passenger experience but its removal during CP6 took away a practical performance management tool that can be used for service recovery
- **Impact of COVID-19 on performance**. In 2020/21, as a result of the COVID-19 pandemic, there was a decrease in both passenger numbers and services. This resulted in a period of improved performance. Since 2020/21, PPM performance

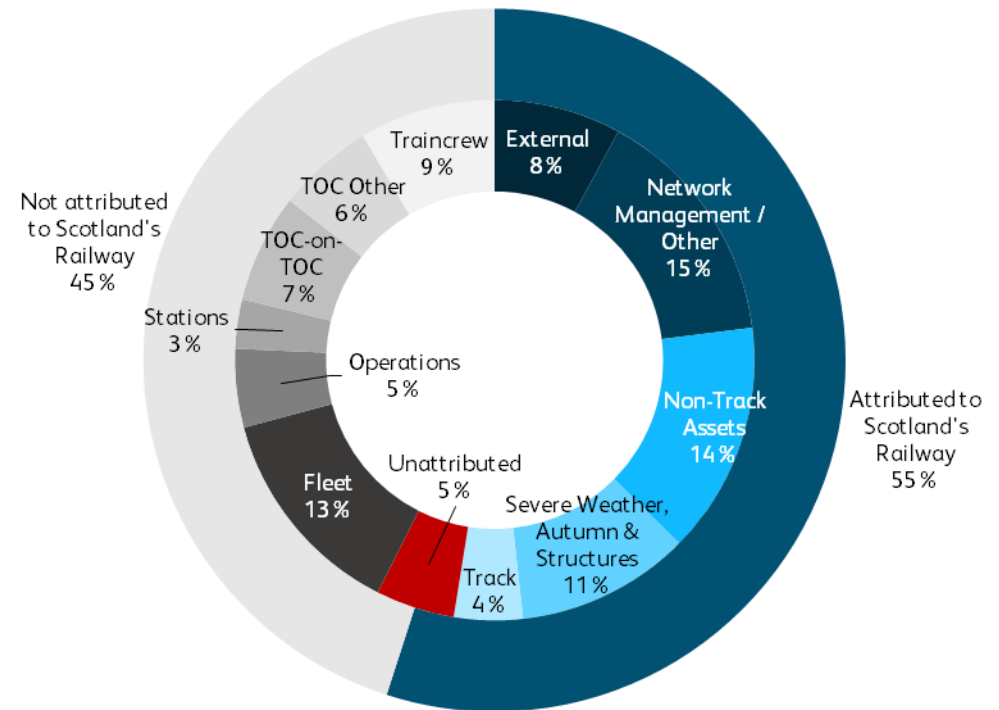Our Strategic Business Plan for Scotland's Railway

has steadily decreased to around 89 %, as service volumes and passenger numbers began to increase. The correlation between the total number of journeys and PPM can be seen in figure 3.33, and we can observe that when journeys on the network are reduced (e.g. during COVID-19), PPM rises. This is likely influenced by less congestion on the network; however, it may also be linked to other factors

- **External factors**. Climate change is causing the UK to be wetter with higher number of days where rainfall totals exceed 95 % and 99 % of the 1961-1990 average have increased over the last decade. You can find out more on the 'UK and Global extreme events – Heavy rainfall and floods' page on the Met Office website. The top 10 warmest years for UK since 1884 have occurred since 2002, and you can find out more on the 'UK and Global extreme events – Heatwaves' page on the Met Office website. As such, the number of severe weather-related incidents (which are above and beyond the capacity of the asset) have more than doubled over the last seven years. Furthermore, external factors such as fires, theft, and fatalities have increased by around 10 % in the same timeframe. These external factors are often uncertain and associated with variability which creates a challenge in mitigating and estimating the impact over time

- **Operational changes to managing severe weather**. Severe weather events have contributed to a degradation in train performance, resulting from blanket emergency speed restrictions introduced during times of severe rainfall. Transport Scotland has recognised this and stipulated that a derogation will be given for late running trains caused by the need for speed restrictions during periods of severe weather within the HLOS.

There are many reasons for delays that caused PPM failures, which can be classified as:

- **Attributed to Scotland's Railway.** These relate to track and non-track assets (e.g. signalling, telecoms, and electrification and plant), Network Management categories (e.g. operations, possessions, and unexplained) as well as broader categories such as Severe Weather, Autumn and Structures and external events (e.g. fatalities, trespass, and bridge strikes)

- **Not attributed to Scotland's Railway**, such as areas of fleet, station delays, and traincrew, controlled by ScotRail Trains

- **Unattributed**, which comprises PPM failures that haven't been investigated as per commercial agreement across Network Rail (e.g. comprise of less than three min delay across section of route).

Figure 3.34 sets out a breakdown of delay causes in these areas. The data is from Scotland's Railway and based on the Mapped Delays – PPM Failures Dashboard from 19 April 2023.

Figure 3.34 Train delay causes from 2014/15-2022/23

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Table 3.14: PPM failure category descriptions

| Attribution	PPM Failure Category	Causes Description
Scotland's Railway	External	Delays primarily caused by third parties such as fatalities and trespass, animal incursion, bridge strikes, road incidents and fires.
Scotland's Railway	Network Management / Other	Delays that are attributed to Network Management but un-investigated, those accepted by commercial agreement, Automatic Route Setting/Traffic Management System/Signallers Assistant Route Setting software problems, vegetation management, and possession delays.
Scotland's Railway	Non-Track Assets	Delays primarily due to signalling, electrification and plant, panel, and other non-track assets.
Scotland's Railway	Severe Weather, Autumn and Structures	Delays primarily caused by restrictions imposed due to severe flooding, high winds, and other climate related factors beyond design capability of infrastructure.
Scotland's Railway	Track	Delays primarily due to broken and defective track rails, or speed restriction imposed for planned track works.
Scotland's Railway / ScotRail Trains	Unattributed	Below threshold PPM failures.
ScotRail Trains	Fleet	Delays due to faults on train assets.
ScotRail Trains	Operations	Delays due to time lost en-route believed to be Operator cause.
ScotRail Trains	Stations	Delays due to passenger behaviours during train embarking /disembarking.
ScotRail Trains	TOC-on-TOC	Delays caused by other operator delays causing congestion and further delays.
ScotRail Trains	TOC Other	Delays due to drunk/disorderly passengers, passengers taken ill on trains, and adhesion issues attributed to train interface with rails.
ScotRail Trains	Traincrew	Delays due to train drivers, train managers, and conductors.

We have influence of around 52 % of PPM failures historically, when excluding our share of unattributed delay, which leaves around 48 % of PPM failure outside of our control. Some notable points across each of these categories include:

1) **Network Management**: this category covers a variety of delay causes associated with operating the railway. This includes unexplained delays, which can be caused by a lack of 'Control Centre of the Future' (CCF) system on the route. Other causes include signaller caused delays, regulation, timetable delays, possession overruns, and vegetation management failures. We've made considerable improvements in this category over the last five years, reducing PPM failures by 56 % and are exploring options to improve this measure further in CP7.

2) **Non-Track Assets**: most failures in Non-Track Assets occur at points and other signalling assets. As such, improving asset reliability is the primary means to improve performance in this area. Over CP6 we delivered a 36 % improvement in delays associated with Non-Track Assets, with a significant reduction in renewals in CP7, it is likely that the rate of improvement will be slower.

3) **Severe Weather, Autumn and Structures**: despite natural year to year variations, annual mean rainfall has slightly increased in the UK since the 1970s.

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In Scotland, there's been an 8 % increase in annual mean rainfall over the last decade when compared to the 1961-1990 long-term average. You can find out more on the 'Network Rail Weather Advisory Task Force Final Report' page on the Network Rail website. Trends can be seen in figure 3.35. The graph expresses % anomalies relative to the 1981-2010 average (hatched black line). The lower hatched green line is the 1961-1990 long-term average. Light grey gridlines represent anomalies of +/- 10 %. Severe weather is the biggest driver of PPM failures in this category by far (around 5 %) where autumn conditions and other weather impacts make up most of the remaining attribution. Civil engineering structures (including earthworks and buildings) make up only around 0.7 % of all PPM failures in the period. Specific climate change resilience investment in CP7 will help us locate critical climate change risk areas and impacts across our network. This will inform targeted asset renewal and maintenance spend. You can find out more in the 'State of the UK Climate' paper on the Royal Meteorological Society website.

Figure 3.35 – Annual mean rainfall for the UK and nations, 1862-2018.
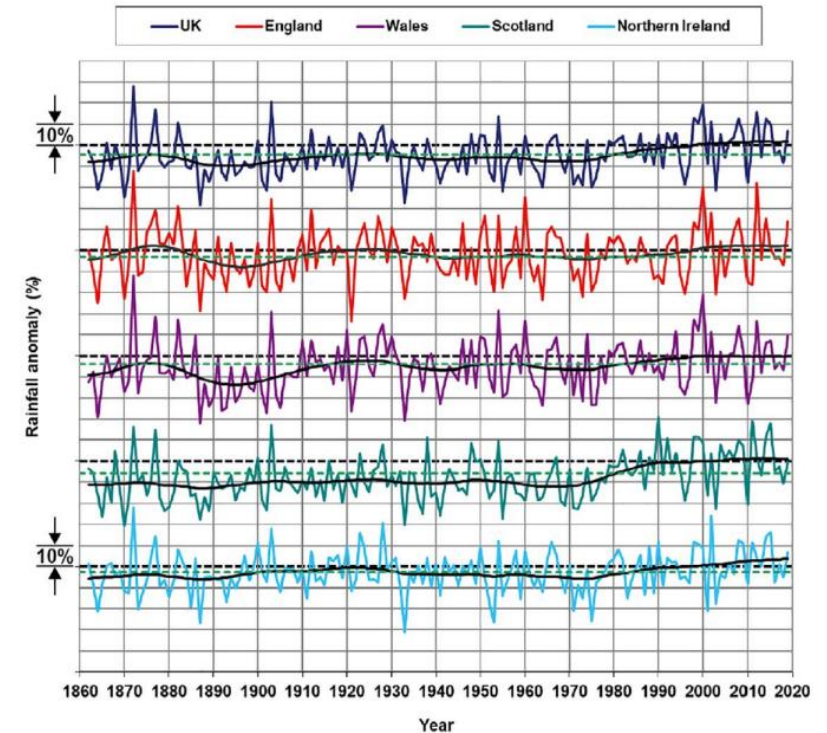
4) **External**: we're impacted by many external events each year including fires, external objects on the line, animal incursions, and utilities outages. The largest sub-category is fatalities and trespass with trespass specifically causing almost half of all delays in the External category. In 2022/23, trespass was responsible for around 4 % of all PPM failures in Scotland and can be challenging to address. We're investing in renewing and improving our boundary measures in CP7 which will help prevent some incidents. In addition, we're also investing in drones, security droids, and enhanced CCTV.
5) **Track:** most track failures are due to track faults including broken rails attributed to deteriorating asset condition. During CP6, we improved our management of
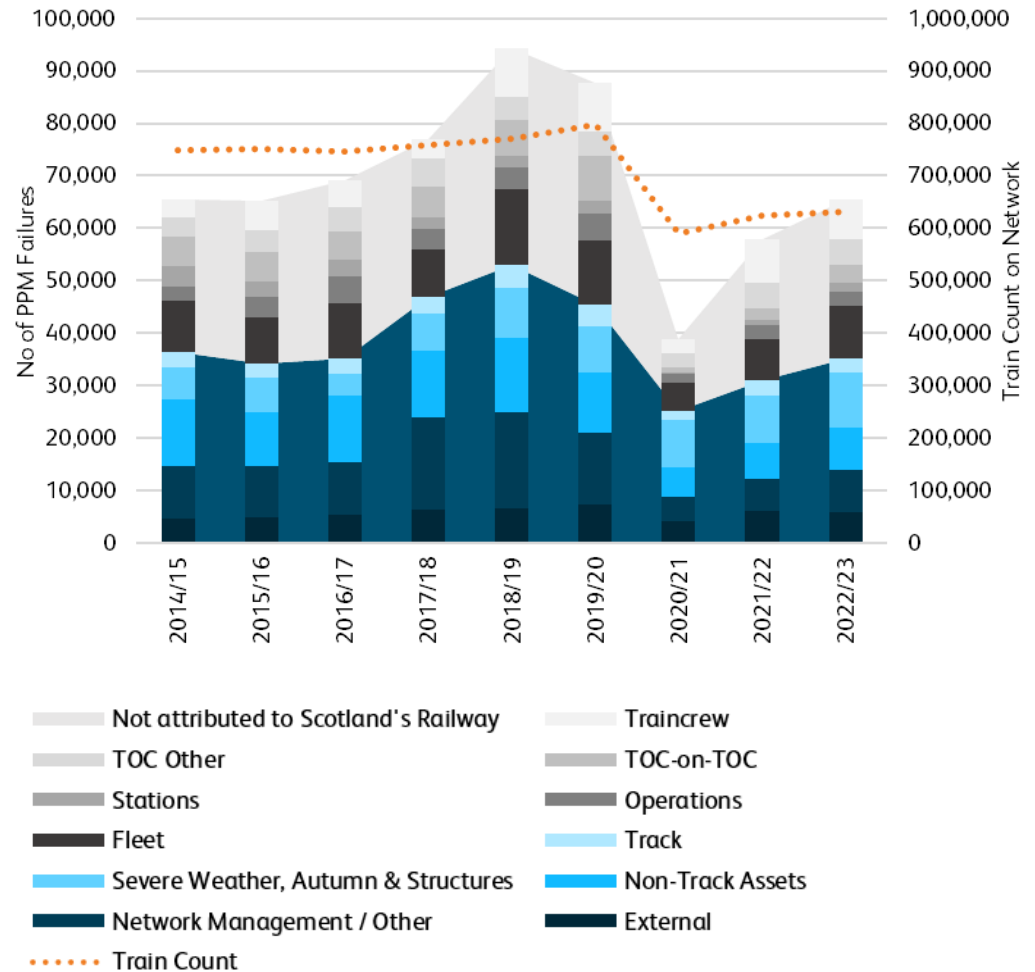
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track faults by improving how we measure track condition and asset reliability. This enables maintenance and renewals work to better target poor condition assets before they fail. This has seen a continued decrease in track related PPM failures in the last three years despite an increase in train journeys.

Scotland's Railway don't have control over around 48% of PPM failures. Within this, fleet and traincrew impact PPM failures the most – accounting for 26% of total PPM failures. These areas are controlled by ScotRail Trains, and failures are largely due to technical and non-technical fleet delays and traincrew causes. There are also a notable number of PPM failures (around 8%) due to passenger behaviour which has a notable impact on ScotRail Trains controlled PPM failures at stations and on trains. We'll continue to work with ScotRail Trains to understand how we can collaborate to reduce these incidents.

Figure 3.36 shows the trend in PPM failures since the start of CP5 for the categories set out in figure 3.34. It's noted that most categories decrease from 2020/21 due to a fall in total train journeys resulting from COVID-19 with the exception of the Severe Weather, Autumn and Structures category.

Figure 3.36 – PPM failures by category from 2014/15-2022/23

There are trends in PPM failure categories which both support and challenge our ability to meet the 92.5% PPM target. For example:
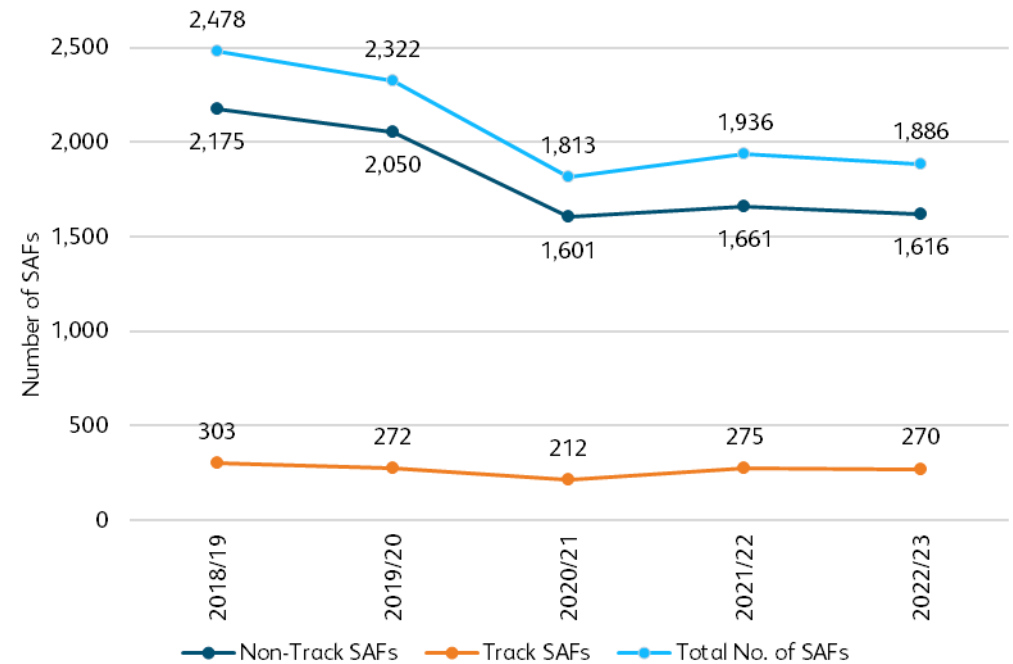
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- When compared with 2017/18, **we've reduced both the total number of PPM failures due to the categories under Network Management** (from around 18,000 to around 8,000) and their share of total PPM failures from around 22% to around 11%

- **Severe Weather, Autumn and Structures has seen the greatest increase as a contributor to PPM failures**, increasing from around 9% in 2017/18 to around 15% in 2022/23

- **PPM failures attributed to the Non-Track and Track categories have been decreasing since 2017/18** with around 30% fewer PPM failures in 2022/23 when compared to 2017/18 across the two categories combined

- **The PPM failures not under Scotland's Railway control have increased since 2017/18 despite operating fewer services.** Traincrew related delays have been badly impacted by the pandemic and plans exist for improvement, but Fleet related delays remain a concern and improvements in this category are currently unfunded

- **Scotland's Railway controlled categories of PPM failure have reduced by around 25% between 2017/18 and 2022/23,** from about 47,000 PPM failures to around 35,000 across the period.

Taking a closer look at the Severe Weather, Autumn and Structures category, this is made up of three key PPM failure causes consisting of civil structures, adhesion (due to autumn leaf fall), and weather (restrictions due to extreme weather, and structures beyond design capability). Over the years, Structures and Adhesion remain relatively constant whereas severe weather impacts have caused a significant rise in PPM failures due to emergency speed restrictions or exceedance of asset design.

CP6 Performance Initiatives

Throughout CP6, our PPM performance has increased in several areas. The improvement is largely due to better asset reliability and network management, from using remote monitoring technology to help predict failures before they materialise, to improved maintenance regimes which target root causes of asset failures. These measures have helped reduce the number of Service Affecting Failures and PPM failures over CP6. As shown in figure 3.37, the number of Service Affecting Failures has a decreasing trend since 2018/19. As our controllable PPM performance increases, it becomes increasingly difficult, and may require proportionately more investment, to make further improvements in PPM. This has been considered within our CP7 performance trajectory.

Figure 3.37 – Annual number of Service Affecting Failures

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We completed a campaign for signalling power systems renewals in 2017/18 across the West Coast Mainline Route to help improve train performance and address deteriorating asset condition. Several sections of signalling power were renewed along the route, at a cost of around £18 million. As shown in figure 3.38, this resulted in around 50% fewer PPM failures due to signalling power supply assets along the West Coast Mainline route over the next two financial years pre-COVID-19.

Figure 3.38 – Case study results for signalling power renewals on West Coast Mainline
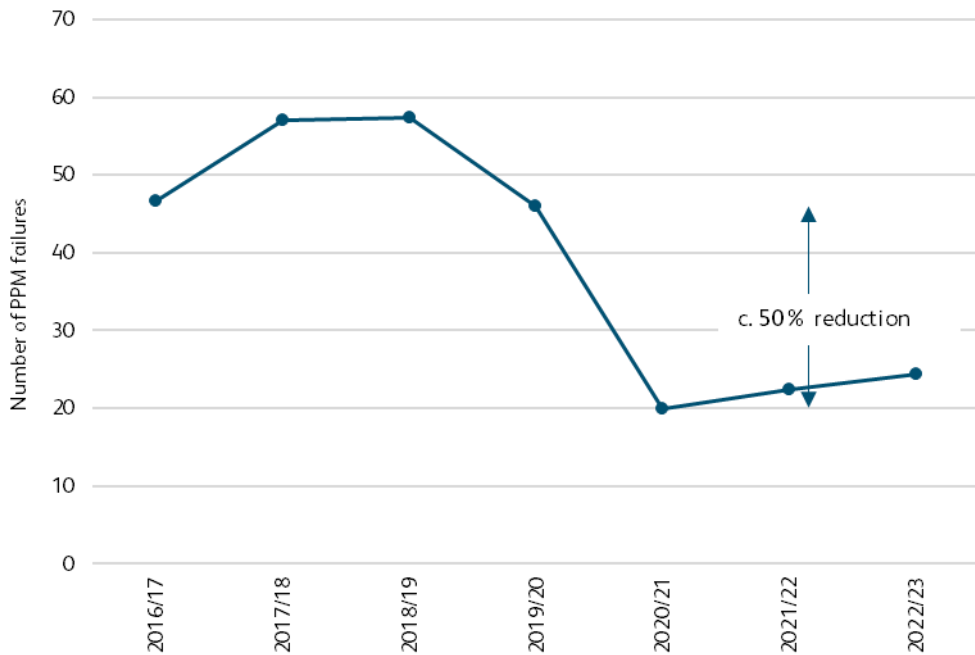
While figure 3.38 demonstrates improvements of renewals investment on a specific route, on a larger scale signalling power renewals (within electrification and plant) have been undertaken across the network with 40% of assets replaced since 2012. Figure 3.39 indicates that a decrease has been seen across the network in PPM failures due to the power supply renewals.

Figure 3.39: Correlation between electrification and plant renewals and signalling PPM failures
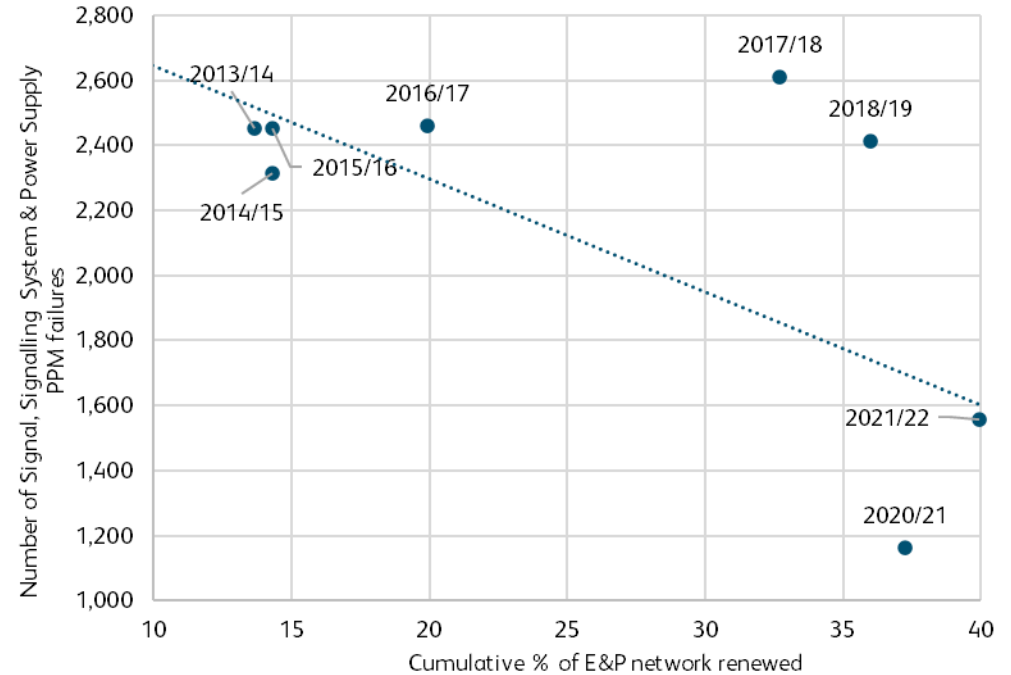
Another statistic used by ORR to measure train performance is the Consistent Region Measure (Passenger) Performance (CRM-P) score. It measures the passenger train delay attributed to Network Rail per 100 train kilometres, where a lower score means that fewer delays are attributed to Network Rail. As seen in figure 3.40, our CRM-P score has been consistently below that of Network Rail regions in England and Wales between 2014/15-2022/23.

While we made improvements in areas that have positively impacted our PPM performance, we recognise there are further areas we can target as part of our CP7 plan as explained in the next section.

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Figure 3.40 – Average CRM-P from 2014/15-2022/23
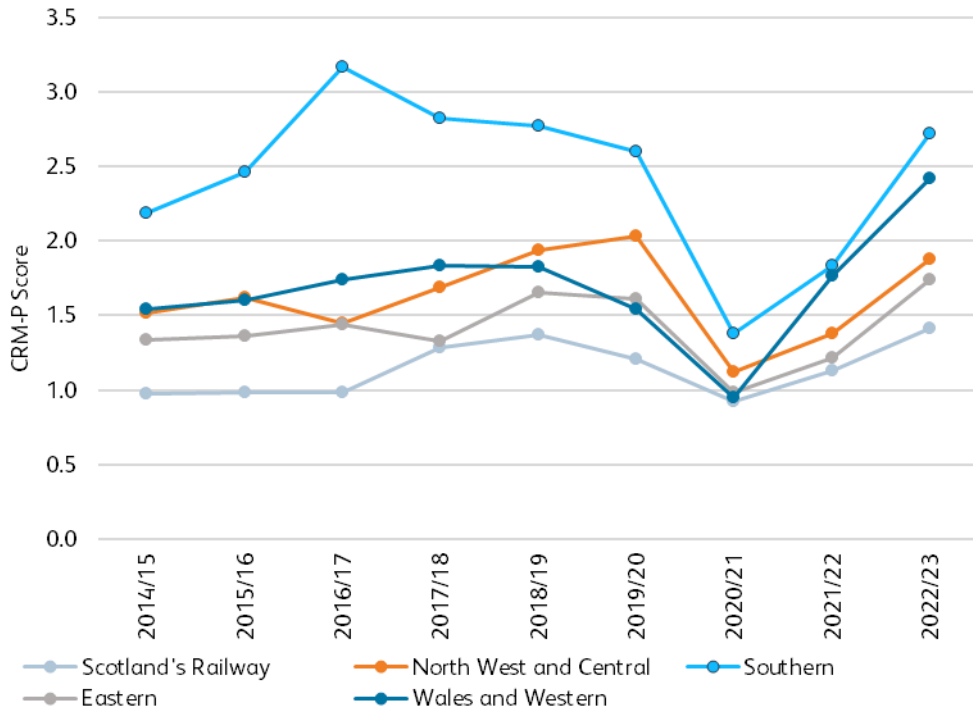
Approach to Performance in CP7

In CP7, we'll continue to develop the initiatives we've started in CP6, with the addition of further improvements in our capability and technology to enable achievement of our PPM target. Some specific areas in which we're investing in CP7 to improve train performance include:

- **Increased vegetation and drainage funding**: we know that severe weather is a major driver of PPM and in CP7 we're including significantly more vegetation

management and drainage renewals investment than in the past to manage the impact of on our assets. This includes further implementation of our revised drainage design standards which accommodates runoff from larger storm events

- **Further application of Intelligent Infrastructure and risk-based maintenance**: which allows us to remotely track asset performance, particularly in non-track assets and earthworks, to allow mitigative intervention prior to failure

- **Improved use of data**: we'll improve the use of performance data to provide greater insight on performance trends and root cause of failure to enable more intelligent operation, maintenance, and renewal decision making to target investment. This will take into account a multidisciplinary approach and integrate more closely with ScotRail Trains

- **Collaborative working with ScotRail Trains**: through our alliance with ScotRail Trains, we'll, as Scotland's Railway, work to identify areas of performance improvement between track and train, especially around management of response and ability to recover services as quickly as possible

- **Opportunities for innovation**: we'll need to discover and test new technologies which might help us better understand, predict and manage performance across our network.

Building our Performance Trajectories

Our Strategic Business Plan includes high-level performance trajectories that are based on a set of assumptions and information available at the time of publication. We've considered further information available to us and have had continued engagement with ScotRail Trains on the performance improvements required to deliver a reliable service to our passengers. We consider that the medium trajectory set out in this document is challenging but achievable with the knowledge available to us at this time.

It's important to acknowledge that our 92.5 % PPM target remains very challenging and that we've not consistently delivered this target. Therefore, we must further explore with ScotRail Trains ways to improve performance to the target level.

Figure 3.41 shows a breakdown of our performance and details the key initiatives in our plan to deliver performance improvements. There's uncertainty in forecasting PPM

performance accurately over a five-year horizon, particularly given all the different factors, many of which are outside of our control. The current, unusually challenging, environment regarding uncertainty about future passenger and service volumes adds to this.

Figure 3.41 – Breakdown of our performance trajectory
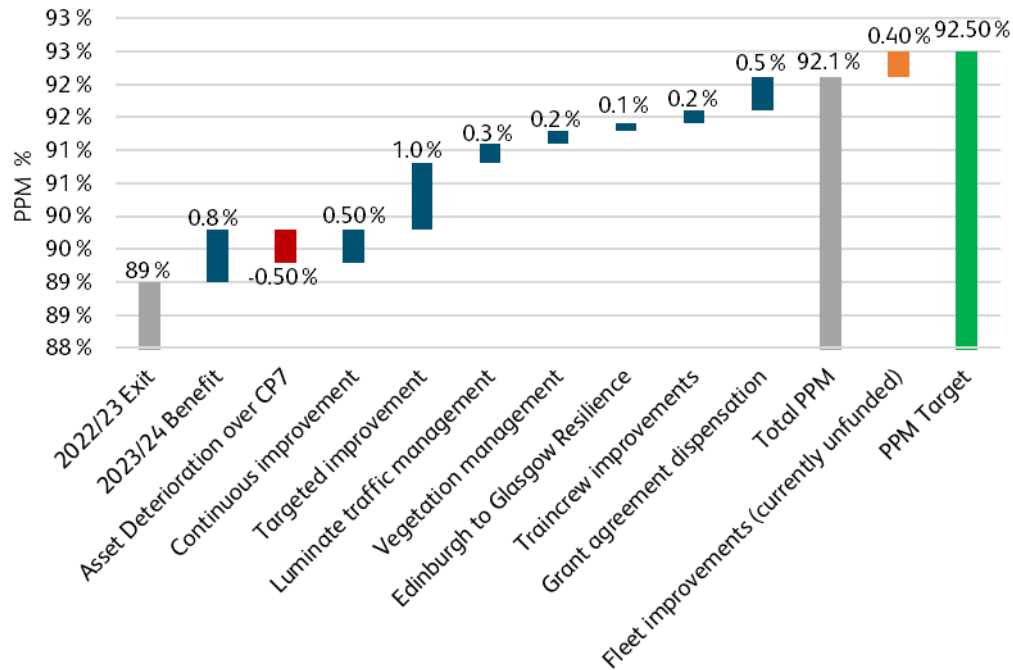
The breakdown of the PPM improvement by component is set out by organisation in table 3.15.

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Table 3.15: Breakdown of PPM improvement required by organisation

Component	Scotland's Railway	ScotRail Trains
23/24 Benefit	+0.7 %	+0.1 %
Asset Deterioration over CP7	-0.5 %	-
Continuous Improvement	+0.5 %	-
Targeted Improvement	+0.6 %	+0.4 %
Luminate Traffic Management	+0.3 %	-
Vegetation Management	+0.2 %	-
Edinburgh to Glasgow Resilience	+0.1 %	-
Traincrew Improvements	-	+0.2 %
Total PPM improvement	**+1.9%**	**+0.7%**
Grant Agreement Dispensation	+0.25 %	+0.25 %
Total inc. Grant Agreement Dispensation	**+2.15%**	**+0.95%**
Fleet Improvements (currently unfunded)	-	+0.4 %

Starting from a 2022/23 exit PPM of 89.0 %, our PPM plan takes a data driven approach and is based on the following components, where a 0.1 % improvement equates to around 650 PPM failures:

- **+0.8% benefit occurring in 2023/24**. This is made up of a +0.4 % benefit in Autumn, +0.1 % benefit from Network Rail funded Performance Innovation Fund schemes, +0.1 % benefit from Non-Track Assets, +0.1 % from Traincrew, and +0.1 % benefit from Network Management. The benefit of initiatives invested in during CP6, such as funding an embedded British Transport Police inspector within Control to aid faster response, anti-trespass fence toppers, and Select DNA equipment to prevent cable theft is captured as part of this CP6 exit position.

- **-0.5% reduction from asset deterioration** due to an affordability-based renewals plan, resulting in a potential 3.5 % forecasted increase in service affecting failures across CP7. Additional factors include response times due to modernising maintenance, and a higher asset count caused new assets being installed.

- **+0.5% benefit from continuous improvement** due to driving a performance culture, focusing on performance after industrial action, and other improvements such as how we apply operational restrictions during adverse weather.

- **+1.0% benefit from targeted improvements** such as the installation of Dual Variable Rate Sanders, funded by Network Rail to date, on service trains (+0.8 % benefit with assumed split +0.4 % attributable to Scotland's Railway and +0.4 % to ScotRail Trains) based on a full fleet roll out and full investment by year 3 (which is still subject to further investment decisions within the wider industry), using more droids and drones, and tactile crime interventions, such as forward-facing CCTV. The +0.4 % for ScotRail Trains relates to the installation of Dual Variable Rate Sanders, which is funded and led by Network Rail. The funding for the full fleet roll-out of Dual Variable Rate Sanders is still to be confirmed.

- **+0.3% benefit from Luminate traffic management** based on analysis of applications elsewhere in Network Rail. Further improvements could be delivered if the £12.5 million funded element in CP7 is increased.

- **+0.2% benefit from vegetation management** due to significantly more de-vegetation funding in CP7 resulting in a 30 % reduction in PPM fails attributed to vegetation.

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- **+0.1% benefit from Edinburgh to Glasgow resilience** due to a £10 million investment in three earthwork sites in the Croy area which should eliminate most speed restrictions during heavy rainfall.

- **+0.2% benefit from traincrew improvement** due to long-term plan to address traincrew shortages by 2027.

- **+0.5% benefit from ScotRail Trains grant agreement** due to assuming more "normal" weather in period 12 of 2023/24, compared to 2022/23, and an allowance for connections to other services and ferries.

- **+0.4% performance improvement required from sustained poor fleet performance** this requires urgent, sustained and significant investment in the ScotRail rolling stock fleet which is currently unfunded. As this element is currently unfunded it is not included in the totals in table 3.15 above.

As a result of these initiatives, and investment from Scotland's Railway, we forecast a total PPM of 92.5 % is achievable by the end of year 4 of CP7 (see figure 3.42 – medium trajectory). This trajectory includes an equal stretch target for both Scotland's Railway and ScotRail Trains in years 1-4 to be possible. Earlier delivery of the performance target would require significant and sustained investment in the ScotRail Trains rolling stock fleet. Over the coming months, we'll continue to engage with ScotRail Trains to develop joint and operator led initiatives and iterate our performance trajectory to incorporate new schemes as they are identified.

We've set out three performance scenarios to estimate how the improvement in PPM will be delivered over time, based on a range of assumptions. Since our interim Strategic Business Plan submission, we've undertaken a review of our trajectories and the underlying assumptions included and updated where appropriate. This has led to some minor adjustments on phasing of benefits and calculation of the proposed derogation for severe weather and connections.

Figure 3.42 shows fast, medium, and slow trajectories from the end of CP6 to CP7. The medium trajectory includes all known levers to improve performance included within this Strategic Business Plan.

Figure 3.42 – ScotRail Trains PPM variable rate trajectories
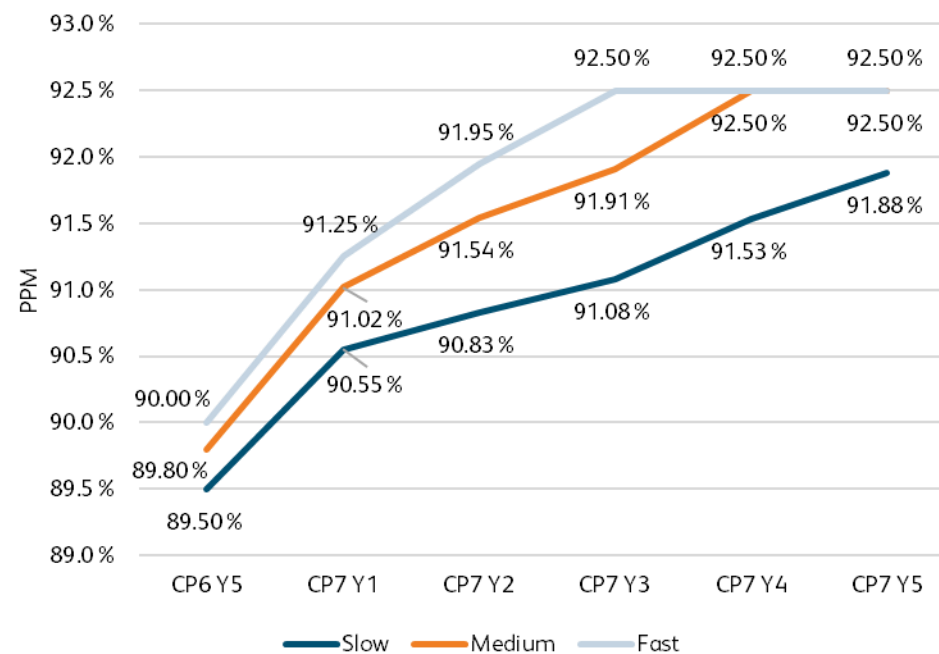
These trajectories reflect the latest information and assumptions available to us with varying degrees of uncertainty at this point of the business planning process. We'll continue to update and iterate our PPM trajectories as new information becomes available, including through engagement with ScotRail Trains and ORR. Flexibility to allow for changes in performance trajectories is important, particularly given the inherent uncertainty associated with this.

Our confidence in delivery is within the medium trajectory, the detail of which is set out below. This trajectory is challenging, but achievable in terms of what we understand to be true in terms of current performance trends, realistic potential CP6 exit and provisional investment decisions for CP7.

Further to the above breakdown, the slow trajectory allows for the threat of climate change outpacing investment (-0.1 % PPM per year), mental health trespass incidents

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increasing in years 1 and 2 (-0.05 % then -0.03 % PPM per year) before improving during the remainder of the control period, continued poor performance of fleet within ScotRail Trains (-0.1 % PPM impact in years 1 and 2 and -0.05 % PPM in year 3), and a stretch target of +0.1 % PPM improvement in years 1-5 for both Scotland's Railway and ScotRail Trains.

The medium trajectory accounts for the waterfall breakdown, plus a stretch target of +0.06 % PPM in years 1-3 and +0.07 % PPM in year 4 for both Scotland's Railway and ScotRail Trains, targeted trespass funding having a +0.05 % PPM impact in years 3-5, and a +0.1 % PPM benefit from train crew improvements in years 2 and 4.

The fast trajectory has a more optimistic view on the rate of asset deterioration (-0.05 % PPM in years 1-5), trespass related incidents reducing through targeted interventions (+0.05 % PPM in years 1-5), gaining further improvement from targeted vegetation management (+0.05 % PPM in years 2 and 3, rising to +0.1 % PPM in years 4 and 5), and a stretch target of +0.025 % PPM in years 1-2 for both Scotland's Railway and ScotRail Trains. This trajectory also includes a further optimistic +0.2 % PPM benefit from Luminate traffic management implementation and includes the option to expand Luminate capabilities into the west of Scotland. This inclusion would require further investment decisions to be made by Scotland's Railway, beyond that already made in the Strategic Business Plan.

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3.9 Support costs

Scope

As a devolved business of Network Rail, we have a number of supporting functions which help in Scotland to support the daily operation of our Scotland's Railway. Reflecting the increasing importance of devolution to Network Rail certain functions including human resources, finance, legal and property have increasingly formed a larger proportion of our direct costs than was the case in CP5. These costs also include the Communications, Investment and Business Development functions.

These costs are expected to remain relatively flat through CP7 following efficiencies delivered in CP6 through the Modernising Management agenda, which involved a review of our management structure to make our business more affordable and sustainable, but which have continuing benefit through CP7. We'll continue to strive to drive down these costs by making our support functions more efficient. The plan includes £475 million to be spent on support costs, split between £116 million within direct support costs and £359 million within network wide function costs.

Our direct support costs cover a range of staff costs in important strategic planning and management roles, office costs, and a number of other materials and contract costs. They are chosen to complement the network-wide teams, and where it is more efficient or enables us to respond to specific local requirements.

Financial position

Table 3.16: Direct support costs – headline financial position, £ million

Headline bid summary	Actual, £ million
CP6 exit (RF9 FY23 forecast)	116
Strategic Business Plan (pre-efficient)	124
Strategic Business Plan	116

Changes from CP6

As set out in table 3.16, our CP7 plan includes £116 million of support costs. This is in line with our forecast CP6 exit direct support costs. The support costs have been forecast in line with CP6 exit rates, with a couple of movements from CP6 being the removal of one-off costs in relation to property, provisions held within CP6 forecasts, and the risk fund also held within. The movement in network wide function costs is discussed in section 3.11.

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3.10 Our people

| This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Interchange programme, equality duties	3.4 (interchange), 3.4 (equality)

Overview

The Scotland's Railway People Strategy 'You in the Making' recognises that one of the key underpinning enablers of our overall CP7 ambitions is the quality of our people. Our overall vision is to 'create an environment where everyone does their best work to create the best railway Scotland's ever had'.
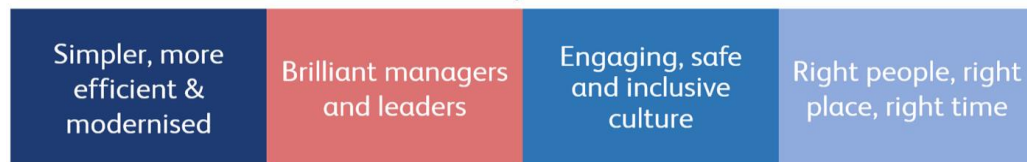
The people strategy is a critical enabler of our Strategic Business Plan and has four key areas of focus:

- **Simple, more efficient and modernised.** Facilitating a modern and flexible organisation that is safe, high performing, efficient, sustainable, and truly service led

- **Brilliant managers and leaders.** Investing in the development of our leaders and managers with a focus on collaboration and enabling change

- **Engaging, safe, and inclusive culture.** Transforming the value of work and fostering a culture that encourages collaboration and belonging, one where everyone feels valued, safe and able to realise their potential

- **Right people, right place, right time.** Taking a consistent approach to workforce planning to build a high quality, appropriately trained, diverse and committed workforce that enables the business to achieve its objectives.

Beneath these four priorities sit individual interventions such as creation of an agile working culture, organisational design and structure, resourcing efficiency, diversity and inclusion, leadership development, management capability and recruitment and selection.

Stakeholder priorities are fully considered and reflected in the development of our plans and we're also working with partners across Scotland's Railway, including ScotRail Trains, with a notable joint programme being the 'Scotland's Railway Academy – Together in the Making', a series of interventions designed to grow talent with a focus on whole railway system learning. This will fulfil the HLOS requirement to "continue to participate in and foster an Interchange Programme".

Targets are built into the current People Strategy so that each initiative has tangible outcomes set to measure success. These will be reviewed as part of our CP7 planning to so that targets and outcomes remain appropriate and relevant to the organisational demands and priorities.

HR Score Cards

Scotland HR Period Score Cards have been developed to track key HR metrics such as sickness absence, health, grievance, training recruitment times and diversity and inclusion by department, all the way down to the individual manager.

Organisational Design and Development

Our people strategy recognises the opportunities of our Modernisation change programmes by seeking to support implementing and embedding a new organisational

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structure within Maintenance, 21st Century Operations and Modernising Management structure. Modernisation also provides opportunity for greater devolved ability and to set out an agenda more closely aligned with the needs of Scotland's Railway, taking account of the policies and drivers specific to Scotland. Recognising our changing rail environment, we're working to continuously improve and deliver efficient use of public money. We also recognise our leaders must be enabled to support their teams through challenging periods of change, which have potential to impact on safety, performance, and employee wellbeing.

Leadership Capability

As we continue to face a period of significant change both within Scotland's Railway and the wider industry, one of our biggest challenges is to enable our leaders to have the capability to support our people through change, drive cultural transformation and help grow our business. This will require us to understand and address the capability gap at an organisational and individual level.

Our leadership development strategy will assess the leadership capability of our leaders in Scotland. Individual development needs will be met through a suite of development options, including, but not limited to, leadership apprenticeships, development programmes, coaching, bite-size online learning and nationally led initiatives such as the Accelerated Leadership Programme, Line Manager Essentials and ILM Level 3 Diploma in Leadership and Management, as well as creating environments and tools that promote self-directed learning as a sustainable way to scale up the impact of learning and increase cultures of continuous learning.

Talent and Succession

We need to improve the effectiveness of our talent and succession planning to maximise the potential within our workforce and succession plan for critical roles. We'll do this through talent and succession forums to provide the mechanism for local review of talent lists, agreement of critical roles and succession plan development. An Executive Talent Forum will also provide the platform for escalation and focus on our highest levels of talent and critical roles.

We'll also utilise 360 feedback, self-assessment and data to close the skills gap and connect skills with opportunities across the business, delivering an employee-centred talent experience.

Industrial Relations

The ability to move forward with modernisation change programmes and implement technological improvement is a major imperative for the development of the business. Our approach is to work collaboratively with the trade unions to agree the introduction of appropriate mechanisms for achieving organisational change and modernising working practices, with agreement on securing resource reductions through voluntary means a priority. Fostering open relationships based on trust and mutual understanding of priorities, constructive dialogue, and combined action planning is the spirit behind the creation of our working relationships with the trade unions, with discussion and consultation as early as possible giving the greatest opportunity for success.

Strategic Workforce Planning

Industry, organisational and funding uncertainty presents a risk to strategic workforce planning outcomes. Attraction strategy and remuneration limitations also present a challenge as we try to attract, retain and develop a workforce to meet the needs of our business in CP7.

Our resourcing strategy will enable us to have the right people, resource and structure in place to continue to sustain our railways into the future, whilst enabling the best use of public monies during a challenging economic period.

We're also working with our people managers to provide candidates with a high-quality experience throughout their recruitment journey and making sure we're advertising our roles on platforms that reach a diverse range of candidates, attracting the best candidates when filling our vacancies in pursuit of enabling a safety conscious and high performing workforce.

Our early engagement strategy will also address the demographic, technological, and skill change requirements of our strategic plans while enabling the ability to forge greater links with Scottish communities, universities and colleges, supporting career opportunities as well as positioning Scotland's Railway as a diverse and inclusive community partner and preferred employer.

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Better work (continuous improvement and systems thinking)

We'll transform frontline team engagement when we improve their work. As the work improves it will become more efficient but also more satisfying, their work will improve through a number of factors – the effectiveness of their frontline leader, the way change is implemented, technology, and better design of their work.

As well as the model delivery unit workstream, we're planning interventions in areas where there are complex problems that need systematic solutions. By involving the teams who do the work, we'll create better engagement and better outcomes. A programme to build internal capability is underway and a pipeline of activity (in addition to that already in play) will be built.

Diversity and Inclusion

We aim to be an inclusive community which recognises the potential, talents, and contribution of all people, regardless of background. We know there is opportunity to improve diversity within our workforce, to make it more reflective of the communities we serve, and to realise the benefits it can bring to business performance.

- We're committed to being an employer of choice for all people. We want to be at the forefront of developing talent and enabling all our colleagues to reach their full potential. We want all employees to bring their full self to the workplace

- We'll tackle inequality and make a difference for vulnerable and marginalised groups in our workforce

- We're implementing agile and flexible working, encouraging job share methods that will work for underrepresented groups as well as supporting more women in progressing to senior leadership positions

- We're working with our employees and external groups so that everyone in Scotland has an equal chance of working with us to deliver a safe and accessible railway

- We'll celebrate diversity and educate ourselves in becoming a truly inclusive workplace

- We'll hold our hands up and acknowledge any shortcomings

- We'll find solutions that will make an impact and result in a genuine change for all

- We'll listen to continuously improve our commitment to diversity and inclusion

- We're clear women, people from Black, Asian and Minority Ethnic backgrounds, disabled people and lesbian, gay, bi-sexual, trans and queer people are under-represented throughout our organisation and have set ourselves ambitious targets to more adequately represent the communities we serve.

Mental Health and Wellbeing

We're supporting our staff through innovative interventions such as providing a range of webinars, promoting meetings, creating safe spaces for colleagues to meet through our Friendship Café, and helping managers to recognise, identify, and support staff with mental health issues. We also have a range of initiatives to support parents working from home to support home schooling and maintain a regular dialogue on agile working for all staff, along with supporting change to our building stock to support greater use of agile and hybrid working.

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3.11 Network-wide functions

Scope

Scotland's Railway is a devolved organisation that aims to deliver the needs and priorities of our primary funder, the Scottish Government, but within this structure, we remain part of Network Rail as a whole. This provides benefit for Scotland by taking advantage of the purchasing power, economies of scale, and the ability to learn and benefit from innovative thinking across the wider company.

Network-wide function costs continue to provide overall Network Rail support, through various support teams such as:

- **Route Services** – provides essential services to support the routes, regions, and functions in delivering a safe, reliable and efficient rail service. These include: supply chain operations to deliver the logistics, components, and rail and road fleet that enable maintenance and renewal of the railway; IT services shaping, building, and running the information technology and connectivity services for the network; telecoms providing national fixed and wireless telecommunication services; shared services for finance and HR, national training provision; centralised commercial and procurement and engineering services to support design and development of engineering.

- **Technical Authority** – defines and discharges network accountabilities for policy, strategy and the control framework in safety, engineering, asset management, security, health, technology, information management, environment, and sustainability.

- **System Operator** – identifies and delivers value across the network and supports the industry and regions through collaborative leadership and coordination, providing the integrated and assured timetables, network and industry strategies, expert advice, and analysis which the industry needs.

- **Human Resources** – supports the business on employee terms and conditions, rewards, benefits and pensions, performance management and performance related pay, and graduate and apprenticeship schemes.

- **Communications** – responsible for network-wide communications, establishing overarching processes for all internal and external communications, external engagement, and a customer service mindset.

- **Chief Financial Officer Directorate** – team of functions that provide a number of core services to regions including Capital Delivery Centre of Excellence, business planning and performance management, regulation management, third party commitments advice, business development supporting, funding, and financing advice, legal services, group control (accounting services, insurance and claims management) and property development and services, and retail management (especially in major stations).

The costs of network-wide functions are allocated to Scotland and are over and above our 'direct' expenditure. These allocated costs are an important part of our budget as they deliver activities that support the delivery of outputs in Scotland and also the running of Network Rail as a whole. They cover both operating and renewals costs and fall into four broad categories:

- **Pass through cost**: These are charged to Network Rail network-wide and cover items such as costs for electricity for traction (EC4T), property 'cumulo' rates, policing and other industry fees. We're funded for these costs on behalf of the industry but recognise we have very little or no control over them

- **Shared Costs**: It's more efficient to manage some activities at a network level rather than in each of the regions, for example our IT estate, logistics and shared services. Shared costs also include significant network-wide investments proposed for CP7 that will support and provide benefits to Scotland, for example, investment in systems by Route Services, System Operator or Technical Authority

- **Central Overheads**: Central overheads cover the provision of activities such as Finance, and Legal services

- **Group costs**: Group costs cover major one-off or non-linear items including insurance, restructuring accruals and other provisions.

We aim that the network-wide, central costs are proportionate and deliver value for money. This includes assuring that the allocation metrics reasonably reflect the benefit to Scotland, and that there are no discrete activities included that do not benefit Scotland.

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We've undertaken a detailed review involving discussions with Network Rail functional teams through challenge panels (for example System Operator, Technical Authority) so that we're confident that the network-wide, central costs included in this plan meet this test but we'll continuously monitor whether these functions are delivering their plans and value for money as we move through CP7, as well as how these relate to delivery of the priorities of Scottish Ministers.

Priorities for CP7

Within these functions, a key priority for our business in CP7 is investing in technology as well as research, development and innovation:

- **Technology –** The industry Rail Technical Strategy provides a clear vision for the future railway which the development and deployment of new knowledge and technology will enable. And meeting the challenges of an aging infrastructure, an aging workforce, competing modes of transport, and climate change will also require the introduction of new ways of working, enabled by the deployment of new technologies. Particular priorities for CP7 include:

  o Decarbonising Network Rail operations including road fleet, office, and depot facilities

  o Investing in the Industry Timetabling Technical Strategy (ITTS) to improve asset data stewardship and address timetable change and performance risks by connecting industry timetabling systems with a modern technology architecture

  o Renew and enhance our IT estate to support digital innovation

  o Development of core Intelligent Infrastructure systems which will improve our predictive asset management capability, monitoring, and the continued use of data to underpin decision making

- **Research development and innovation investment –** Innovation is critical to the railway's future. As Scottish Ministers' HLOS recognises, continued effective research development and innovation, and adoption of technology, is essential to securing competition and innovation within rail. Research development and

innovation plays a vital role in unlocking opportunities in Scotland's Railway and the wider rail sector to improve safety, reduce cost, and achieve net zero, to improve the customer experience and to deliver a more sustainable railway system for future generations.

Financial position

Table 3.17: Allocation of network-wide function Opex costs, £ million

2023/24 prices, £ million	CP6	CP7	Change
System Operator	42	43	+1
Route Services	178	231	+52
Technical Authority	31	31	0
Group Property	6	7	+1
Corporate Services	56	45	-11
Group	122	66	-56
Total Functions	**435**	**423**	**-12**

Table 3.18: Allocation of network-wide function Capex, £ million

2023/24 prices, £ million	CP6	CP7	Change
System Operator	21	11	-11
Route Services	228	162	-66
Technical Authority	71	37	-35
Group Property	6	1	-5
Corporate Services	0	0	0
Group	-66	-32	+33
Total Functions	**261**	**178**	**-84**

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Table 3.19: Allocation of network-wide function traction electricity, industry costs and rates (TEICR) costs, £ million

2023/24 prices, £ million	CP6	CP7	Change
System Operator	0	0	0
Route Services	0	0	0
Technical Authority	249	436	+187
Group Property	131	157	+26
Corporate Services	12	26	+14
Group	3	10	+7
Total Functions	**395**	**629**	**+235**
Total Functions excl. EC4T	**152**	**200**	**+48**

Cost components

As set out in the tables above, our CP7 plan includes £1,230 million for our network-wide function costs. This is an increase against CP6 expenditure of £139 million. The above tables exclude European Train Control System (ETCS) costs, of which £10 million is included within our forecast expenditure and also the forecast impact of inflation changes from November 2022 to March 2023 OBR rates, forecast as £21 million of an impact. When TEICR costs are excluded, there's a £98 million reduction in network-wide costs allocated to Scotland. The main elements of the network wide functions are summarised below, and further information on network-wide costs are available in the Function Strategic Business Plans published on 19th May:

- **Route Services:** The Route Services GB plan intends to spend £1,500 million per annum in CP7 to deliver its activities (of which £1,100 million per annum of this total will be charged directly to regions based on demand). The remainder will fund national provision of our corporate services such as IT, Telecom Services, and Infrastructure Monitoring. Expenditure net of recharges to the regions in CP7 is expected to increase compared with CP6 due to the following key areas:
  - o Increase in leasing costs for delivery of key improvements in infrastructure monitoring. This is a change to our delivery mechanism which will increase our operational expenditure but drive an overall

efficiency for Route Services in capital expenditure and will deliver safer and more efficient collection and analysis of data on our assets.

  - o Additional IT costs due to a combination of IT estate growth due to the increasing digitisation of services and specific cost pressures within the IT industry.

- **Technical Authority:** Our Technical Authority plan is based on CP6 exit resourcing level and includes the recent insourcing of occupational health. Key activities including providing technical support to our regions and national functions on asset management activities and standards, providing guidance on the delivery of key environmental and sustainability objectives, as well as providing broader support to the business on safety, health and wellbeing.

- **System Operator:** Our System Operator plan is based on the resourcing level following the implementation of Modernising Management. It also includes funding for key programmes such as 21st Century Operations, which is a programme to improve career development opportunities for our operational staff and provide additional training, so they have the required skills to manage the operations of a safe and reliable railway. Other key programmes include the Weather Risk Task Force which is undertaking critical work to improve our understanding of the impact of extreme weather and climate change on our network and the operational interventions that need to be introduced to continue to run a safe and reliable railway.

- **Human Resources:** Our plan includes the continuation of our business-as-usual HR activities. Our Human Resources plan includes a 2% annual efficiency, which will primarily be delivered through reductions in third party costs (e.g. subscriptions, administration of healthcare and pension schemes and reward and benefit offerings as well as professional consultancy advice).

- **Communications:** Our plan includes the continuation of our business-as-usual communications activities (e.g. external affairs and media relations), alongside specific third-party support (e.g. campaigns and brand development). CP7 assumes no change to resourcing levels and maintains staff costs at FY24 levels.

- **CFO Directorate**: Our plan includes the continuation of our business-as-usual finance activities. Staff costs and staff count is kept at CP6 exit levels. Our

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property function plans to achieve efficiencies in CP7 through our workplace accommodation strategy.

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3.12 Income

Scope

Network Rail receives income from:

- Government grants – network grants are agreed with Transport Scotland through the periodic review, in lieu of access charges

- Access charges paid by train operators for using our infrastructure, including track, stations, and depots, and charges for traction electricity

- Other commercial income, which is largely from property rental and property sales.

The commercial income is deducted from the costs of running the railway to leave a net income requirement. Higher commercial income reduces the need for taxpayer contribution, so we've worked hard to maximise recovery post-COVID-19.

The net requirement comprises the government grant along with access charges, which are based on assumptions about the number and types of trains that will operate over the five years of the business planning period. It's possible our access charge income will be higher or lower than forecast if these assumptions are not correct.

Priorities for CP7

COVID-19 has significantly impacted our income during CP6. We've seen reduced income across property, station retail and car parking, and track access charges, some of which were a result of decisions Network Rail took across the UK, for example, in temporarily reducing rents, to protect the long-term financial sustainability of tenants. The impact of COVID-19 on our income, particularly property income, is expected to be felt throughout CP6 and into CP7, with the passenger train miles assumed to be less than pre-COVID-19 levels by the end of CP6.

Scotland's commercial income is relatively small in comparison to other parts of Scotland's Railway, but we'll strive to maximise every opportunity, whether in raising existing income levels or realising one-off capital receipts from the sale of land, property, or other assets, to help with reducing the net cost of the railway in CP7.

Financial position

The table below, shows the overall income forecasts for CP7 based on the assumptions described in the rest of this section. Comparisons between CP6 and CP7 are difficult, given the impact that COVID-19 has had on both traffic levels and passenger numbers.

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Table 3.20: Summary of Scotland CP7 income, £ million

£ million in 2023/24 prices	CP6	CP7	Change
Government grants			
Network grant	2,503	3,515	+1,012
Track access charges			
Passenger fixed track access charges	1,674	669	-1,015
Passenger variable access charges	158	179	+21
Schedule 4 access charge supplement	73	75	+2
Schedule 4 and 8	-253	-82	+171
Freight track access charges	15	18	+3
Open access income	2	1	-1
Stations and depots	296	294	-2
Electricity for Traction (EC4T)	243	429	+186
Other commercial income			
Property income	85	85	-
Other (including Train Operating Companies (TOC) insurance premiums)	2	3	+1
Total	**4,796**	**5,185**	**+389**

Total Scotland CP7 income from access charges and other commercial income, excluding any assumed network grant, is forecast at £1,582 million in 2023/24 prices. The high-level breakdown is summarised in table 3.20. Please note that the Schedule 8 forecast is assumed to be zero as the performance benchmarks are still to be agreed.

Government grants and fixed track access charges

Historically, a large proportion of our income (87 %) comes from network grants directly from Transport Scotland and from train operators via fixed track access charges (FTAC). In their Statement of Funding Available (SoFA), Scottish Ministers have quoted a single figure (£4,200 million) over the five years to cover both network grants and FTAC. The £4,200 million figure represents the nominal value of the funds available and hasn't been adjusted for the expected value of inflation. It therefore doesn't sum to the total of the network grant and fixed track access charges in table 3.20.

Transport Scotland have indicated they would like to shift this split to more closely align to Network Rail in England and Wales, who receive a greater proportion of its funding through the network grant. Although this would have no impact on the expected real value of income at this stage, it would expose Scotland's Railway to a higher degree of inflation risk than previously as income from fixed track access charges is index-linked to inflation. This is discussed further in the risk fund section in Chapter 4. For planning purposes, we've assumed that the split between these two sources of income is now 84 %/16 % in relation to network grant and FTAC respectively.

External income and impact on net funding requirement

In Scotland, most of our income comes through network grant payments from Transport Scotland or from access charges paid by passenger train operators contracted by Transport Scotland. However, a small proportion of our income comes from external sources like freight operators, open access passenger operators, and property income. This 'external' income reduces the net funding required for our CP7 plans provided through the SoFA.

Table 3.21 below provides a high-level breakdown of external income. Total CP7 external income is forecast to be £104 million (in 2023/24 prices) for Scotland.

Table 3.21: Scotland CP7 assumptions for external income, £ million

£ million	CP6	CP7
Freight track access charges	15	18
Open access income	2	1

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Property income	67	78
Group property income	18	7
Total	**102**	**104**

Property

During CP6, we've changed the way we manage our property assets. We've devolved property from a network-wide function to a mostly devolved model, as part of our Putting Passengers and Freight First programme. In September 2020, we established Scotland's property team, supported by a smaller national Group Property team. Group Property provides services and activities to the regions, as well as delivering some activities centrally for reasons of added value, cost efficiency and consistency. We made this change to better align the teams to local objectives and develop strategies that put passengers and freight users first. We're doing this by optimising the use of operational land, generating capital receipts to reinvest in the railway, creating economic opportunities for small and medium enterprises, releasing land for new homes, and improving conditions and access for railway staff.

CP7 third-party funding

As part of the Open for Business programme, we're focused on attracting third-party funding into Scotland's Railway. For these purposes, we defined third-party funding as any funding which needs to be attracted into Scotland's Railway which would not otherwise have been allocated to railway projects. It includes investment from the private sector, local government, city deals and other parts of the Scottish Government.

In CP6, there's a broad mix of projects, however, the focus tends to be on enhancements rather than operations, maintenance, and renewals.

We have similar ambitions for third-party funding in CP7 and this is currently being developed. Given our growing expertise in this area, we'd have looked to increase our target for CP7 but the current challenging financial conditions within government, and the economy more broadly, likely make this challenging, at least at this stage in the development of our plan.

We're continuously exploring the potential to secure third-party investment to support delivery of our core plans. However, even where value for money opportunities exist, there are often challenges to securing an off-balance sheet treatment for such projects. Without this, while such projects may deliver affordability benefits, they still require budgetary spending cover from the government. Therefore, while we'll continue to seek to maximise the benefits of third-party funding in CP7, we can't assume we'll be able to reduce our CP7 funding requirements as a result.

We haven't, therefore, included a specific value of third-party funding for CP7 in our plan at this time but would welcome further discussions with Transport Scotland and ORR about the opportunities we might explore and the associated budgetary implications.

Assumptions

We've set out below the key assumptions that underpin our high-level income forecasts from our baseline. We've identified assumptions for access charges and property income, with the former dependent on traffic volumes and payment rates, and the latter more affected by footfall and opportunities for asset sales.

Given the uncertainty of demand recovery from the pandemic, it's difficult to project demand over CP7, so these assumptions need to be treated with a degree of caution at this stage. As demand recovery continues, we'll take account of the latest analysis of passenger demand. For example, the latest forecast of passenger footfall is that it will return to 75 % of pre-pandemic levels by the end of CP6.

The table below sets out the underlying assumption for our CP7 access charges forecast.

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Table 3.22: CP7 assumptions for access charges forecast

Category	Assumptions
Access charges	
Franchised passenger track access charges (Variable Usage Charge (VUC), Electrification Asset Usage Charge (EAUC))	Based on 2023/24 rates and flexed for forecast changes in traffic.
Schedule 4 Access Charge Supplement	Applied CP6 ACS rates but flexed the forecast for changes in the level of renewals activity.
Freight track access charges	Based on CP6 Year 5 rates and flexed for projected changes in freight traffic.
Passenger open access track access charges	Based on CP6 Year 5 rates and includes income from Lumo open access services.
Stations and depots: station long-term charge, stations lease, Qualifying Expenditure (QX) income and depots	Station lease and depots based on CP6 year 5 charge, flexed for changes in activity. Station QX based on CP6 agreements for recovery of costs.
Electricity for Traction (EC4T)	CP7 costs are based on traffic forecasts provided by train operators and latest price forecasts from our energy supplier. Our plan assumes traction electricity costs are fully recovered from train operators. There's currently significant volatility in energy price forecasts, so we expect our EC4T forecast to vary over the next 12 months as we move towards our delivery plan. Whilst EC4T is a pass through, it impacts on our financial position, so we'll continue to work closely on with train and freight operators on EC4T forecasting and management.

3.13 Industry costs and rates

While not part of operations, maintenance, and support costs, the purpose of this section is to provide a brief overview of what has been included in our CP7 submission for industry costs and rates. These costs are largely outside of our control and dependent on government valuations (for example, cumulo rates) or the costs of other industry participants, including Rail Safety and Standards Board and the Office of Rail and Road.

Our CP7 submission includes forecast industry costs and rates of £201 million over the control period, an increase of 28% compared with CP6 levels. As highlighted by table 3.38, this increase is predominantly driven by an assumed increase in cumulo rates. While the result of the next revaluation effective from 2023/24 is not yet agreed with the Valuation Office Agency, our forecasts are informed by our understanding of the likely outcome. We've also assumed a 15% increase for the revaluation effective from 2027/28. The allocation of ORR costs has also been updated in CP7, which has led to an increase in ORR costs attributed to Scotland's Railway.

A summary of forecast industry costs and rates is provided in table 3.38. It should be noted that Electricity for Traction (EC4T) costs to Scotland's Railway are offset by an equal amount of EC4T charges income, as set out in Section 3.9, albeit there would be an increase in total industry costs through the costs to the train operators paying EC4T charges. In addition, the British Transport Police (BTP) costs are funded separately through a different grant mechanism and not included as part of the overall Scotland's Railway costs funded through the SoFA.

Table 3.23: Summary of forecast industry costs and rates in CP7, £ million

Costs	CP6	CP7
Property cumulo rates	134	167
Rail Safety and Standards Board	6	7
ORR	12	26
Total (less EC4T)	**152**	**200**
EC4T	243	429
Total	**395**	**629**

Chapter Four – Our consolidated financials

4. Our consolidated financials

4.1 Statement of Funds Available for CP7

The SoFA sets out one number – the assumed operations, support, maintenance, and renewals net expenditure in CP7 for Scotland, of £4,200 million (excluding variable income and traction electricity (EC4T) costs and income). The £4,200 million figure represents the nominal value of the funds available and hasn't been adjusted for the expected value of inflation. It therefore does not sum to the total of the network grant and fixed track access charges in table 4.1 below. This is the value for projected fixed track access charges (FTAC) and network grant payments from Transport Scotland in CP7, in nominal prices. The balance between fixed track access costs and network grant payments is still to be agreed through ORR's draft and Final Determination process, and as noted above, is currently based on an assumption that they'll be in line with the England/Wales proportions, which would be a change from the CP6 allocations.

There's, as of yet, no defined profile of spend across CP7, which will be subject to the outcome of ORR's periodic review process and ongoing discussions with Transport Scotland and ORR. In addition, The SoFA doesn't include provision for railway enhancement projects, which will be subject to separate decision-making by Scottish Ministers.

In cash terms, for the five years of CP6, our forecast income via fixed track access charges and network grant receipts is £3,767 million. On a like-for-like basis for CP7, the SoFA sets out that we'll receive £4,200 million for our operations, support, maintenance, and renewals net expenditure. Both the CP6 and CP7 values exclude EC4T and British Transport Police costs.

In real terms (2023/24 prices, based on Office for Budget Responsibility's November 2022 CPI forecast), and excluding EC4T, our CP6 funding requirement is £4,200 million. The SoFA level of funding is therefore broadly in line with CP6.

The SoFA is expressed in cash/nominal terms and the annual breakdown of the November 2022 Office for Budget Responsibility forecast includes two years of the Control Period which are subject to forecast deflation, which complicates the projected impact of inflation on our plans. The updated March 2023 Office for Budget

Responsibility forecast now includes lower levels of forecast deflation in only one year of the Control Period.

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4.2 Our financial overview

We acknowledge that, in challenging financial circumstances, the Scottish Government has reflected its ambition for the railway by protecting the funding available to Scotland's Railway in the next five years. However, it's important to recognise that difficult choices still need to be made. This is for a number of reasons, including that more assets were planned for renewal in the next five years than in the current funding period; the impact of climate change is impacting the reliability of our assets, driving the need for further investment; and some works have been deferred from this funding period as a result of COVID-19 and other reasons.

Within a challenging funding environment, we've focused on developing an efficient business plan that will deliver a safe and reliable railway. This has meant prioritising activity that will support greater resilience of the network during extreme weather events, as well as focusing on improving our performance so that more trains arrive on time.

We've developed a five-year business plan to cover our operations, support, maintenance, and renewals costs between April 2024 and March 2029. In recognition of the financial environment and our belief we can be a more efficient and better performing organisation in the future, we've developed a business plan that delivers value for money for our stakeholders and customers. In total, our Strategic Business Plan is estimated to cost a total of £4,756 million in real terms. This is made up of the £4,200 million funding from the Scottish Government and £556 million from forecast variable income streams.

The purpose of this section is to set out the headline financials for the core elements of our plan, as well as our approach to inflation and input prices.

Financial tables

All figures shown are in £ million in 2023/24 prices, inclusive of input price inflation, headwinds, and efficiencies. Please note, there was £329 million of risk provisions at the start of CP6, which has been utilised during the course of the control period.

Table 4.1: Strategic Business Plan expenditure, £ million

CP7 Plan expenditure – Scotland	Direct costs		Allocated costs		Total costs	
£ million	CP6	CP7	CP6	CP7	CP6	CP7
Operations	354	419	0	0	354	419
Maintenance	1,019	1,045	0	62	1,019	1,107
Support	116	116	435	359	551	475
Industry costs and rates	0	0	152	201	152	201
Electricity for traction (EC4T)	0	0	243	429	243	429
Total operating expenditure (excl. EC4T)	**1,489**	**1,580**	**830**	**1,050**	**2,319**	**2,630**
Renewals	2,150	1,914	67	12	2,217	1,926
Other capital expenditure	56	68	194	168	250	236
Total capital expenditure	**2,207**	**1,982**	**261**	**180**	**2,467**	**2,162**
ETCS enablers	0	0	0	10	0	10
Risk provisions	10	301	0	0	10	301
Inflation and pay adjustments to March 2023 OBR	0	61	0	21	0	82
Total expenditure	**3,705**	**3,924**	**1,091**	**1,261**	**4,796**	**5,185**
Total expenditure less EC4T	**3,705**	**3,924**	**848**	**832**	**4,553**	**4,756**

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Table 4.2: Strategic Business Plan income, £ million

CP7 Plan income – Scotland	Direct income		Allocated income		Total income	
£ million	CP6	CP7	CP6	CP7	CP6	CP7
Passenger access charges (VUC, EAUC)	-128	-127	-30	-52	-158	-179
Stations and depots: station LTC, stations lease, QX and depots	-296	-294	0	0	-296	-294
Freight and open access track access charges	-17	-19	0	0	-17	-19
Electricity for Traction (EC4T)	0	0	-243	-429	-243	-429
Property and other income	-67	-81	-18	-7	-85	-88
Schedule 4 access charge supplement	-46	-50	-27	-25	-73	-75
Schedule 4 and 8	238	57	15	26	253	83
Fixed track access charges	-1,674	-669	0	0	-1,674	-669
Network grant	0	0	-2,503	-3,515	-2,503	-3,515
Total income	**-1,990**	**-2,345**	**-2,806**	**-2,839**	**-4,795**	**-5,185**
Total income less EC4T	**-1,990**	**-2,345**	**-2,563**	**-2,410**	**-4,553**	**-4,756**

Table 4.3: Strategic Business Plan net expenditure, £ million

CP7 Net expenditure – Scotland	Direct costs		Allocated costs		Total costs	
£ million (Post Efficient)	CP6	CP7	CP6	CP7	CP6	CP7
Total expenditure less EC4T	3,705	3,924	848	832	4,553	4,756
Total income less EC4T	-1,990	-2,345	-2,563	-2,410	-4,553	-4,756
Net expenditure less EC4T	**1,715**	**1,579**	**-1,715**	**-1,579**	**0**	**0**

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4.3 Efficiency programme

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Delivering efficiency	3.41 (delivering efficiency)

Scope

As a public body, a substantial proportion of the funding for Scotland's Railway comes from taxpayers. We've been entrusted with public money and have a responsibility to spend it wisely and work more efficiently to deliver the best value possible. Pressures on public finances throughout the pandemic have reinforced the need to increase efficiency to help drive down the net cost of the railway.

Background

Through CP6 we've continued to drive efficiency in how we deliver our services. We now seek to build on that foundation with a challenging and ambitious efficiency programme to reflect the financial challenges and pressure on public funding.

In CP7 we're targeting a further £380 million of efficiencies within our operations, support, maintenance and renewals expenditure in Scotland's Railway. By the end of CP7, we expect the delivery of our controllable operations, support and maintenance costs to be 10 % more efficient than at the end of CP6, and our renewals to be 15 % more efficient.

What our funders and stakeholders want

Our responsibility to reduce costs to government and increase the efficiency of operations, asset maintenance and capital investment, is reflected in the HLOS for CP7. Additionally, our passenger research shows that value for money continues to be a high priority. Efficiency across the whole industry, with track and train working more closely

together, is essential to provide better value for money for passengers and freight customers.

Greater cost efficiency in CP7	A strong culture of efficiency and innovation in the railway over CP7 and beyond	Benchmarking to drive efficiencies and a better understanding of costs	Efficiency and productivity gains through rail reform and industry cooperation	A robust approach to commercial practices in contracting and delivering work

Our CP7 efficiency objectives

Our strategic objectives build on our strong delivery of efficiencies in CP6. We have set ourselves ambitious and stretching efficiency targets:

- Deliver 10 % efficiency on operational expenditure

- Deliver 15 % efficiency on capital expenditure

- Scotland's Railway will assist operators in enabling wider industry benefits

Our strategy for delivery of efficiency in CP7 can be summarised across four key areas:

- **Supporting the creation of a more unified industry.** Driving aligned and connected ways of working and using an improved understanding of whole-industry costs to make more efficient decisions and improve these ways of working, including smarter access decisions, tackling joint industry opportunities across our property portfolio

- **Smarter and more efficient ways of working with our supply chain and development of more agile client models and deeper alliances to drive win-win commercial relationships.** We'll harness the benefits of innovative partnerships

- **Transforming our capital delivery capability through widespread use of our Project SPEED and PACE principles to cut the time and cost of delivery.** A new,

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streamlined project life cycle framework, which will leverage the advantages of our devolved organisation to provide the right tools and mindset to drive value

- **Mitigating the impact of a challenging financial climate and the effect of inflation on our cost base**. This includes smarter, more aligned commercial approaches and continuing to develop a modernised approach to workforce pay.

Table 4.4: Summary of CP7 efficiency targets

£ million	2024/25	2025/26	2026/27	2027/28	2028/29	Total
Opex	13	24	28	33	39	136
	3.8 %	6.6 %	7.6 %	8.8 %	10.0 %	7.4 %
Renewals	18	44	55	60	65	243
	4.4 %	10.0 %	12.4 %	14.5 %	15.0 %	11.3 %
Total	**31**	**68**	**83**	**93**	**104**	**380**
	4.1%	**8.5%**	**10.2%**	**11.8%**	**12.6%**	**9.5%**

Note: numbers may not sum due to rounding

In total, over the course of the ten years of CP6 and CP7, we'll have driven robust, sustainable efficiencies that will have reduced the costs of running the railway by 22 %. This reduction in costs is shown by the grey line in figure 4.1 below. In reducing costs by 22 %, we'll have delivered over £778 million of cumulative savings for taxpayers and farepayers, which is shown by the blue (CP6) and orange (CP7) bars in figure 4.1.

Figure 4.1: Efficiency delivery over CP6 and CP7
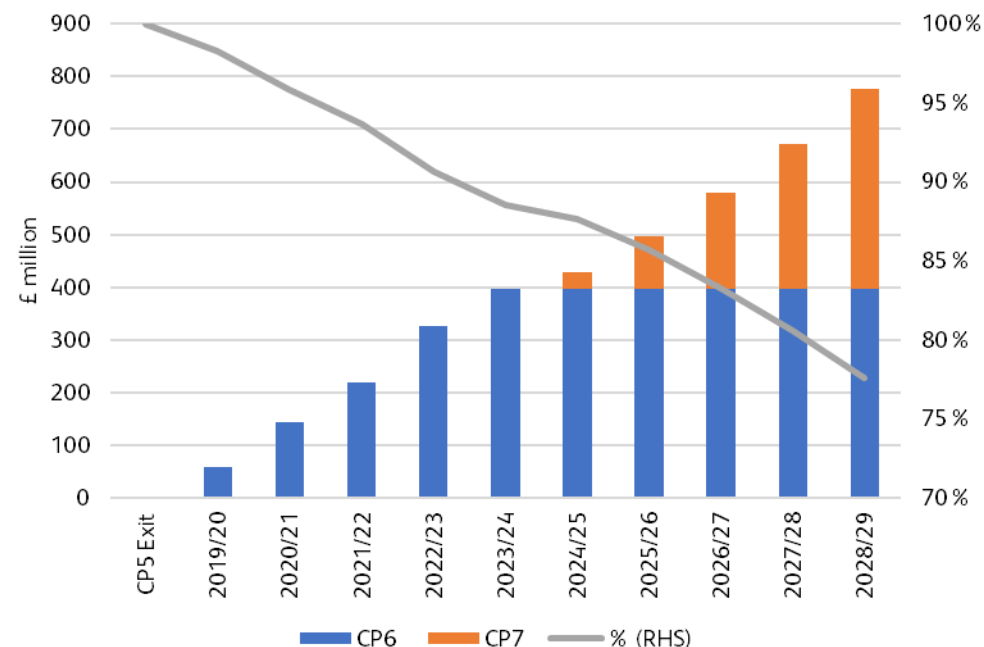
CP7 efficiency programme

As our CP7 targets depend upon achieving additional efficiencies, with many opportunities already enabled in previous control periods, the scale of the efficiency challenge required is ambitious and will require a more transformative approach.

We're therefore developing an efficiency programme for CP7 that will be delivered through a combination of incremental improvements and a series of step-changes, to take advantage of further opportunities for modernisation.

The incremental part of our efficiency programme forms approximately half of the overall efficiency target for CP7. Our path to achieving those efficiencies is well

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developed, with specific activities identified and included in our functional and asset level plans.

These initiatives are described in greater detail in the applicable part of this document – maintenance, operations, support, and asset-level renewals sections in Chapter 3.

The majority of our incremental efficiencies will be managed through established management and governance arrangements, with targets incorporated into cost centre budgets, tracked through periodic reviews, and monitored through our 'Fishbone' efficiency reporting framework.

Around £184 million of our CP7 efficiency target requires initiatives of a more transformative nature, typically impacting more than one functional area and requiring a programme management approach to coordinate and implement the business changes that enable benefits.

We've developed a Net Cost (of the railway as a whole) reduction programme of projects, grouped under six thematic workstreams, with each workstream employing similar capabilities.

The six delivery workstreams identified are summarised in the following table:

Figure 4.2: Six delivery workstreams
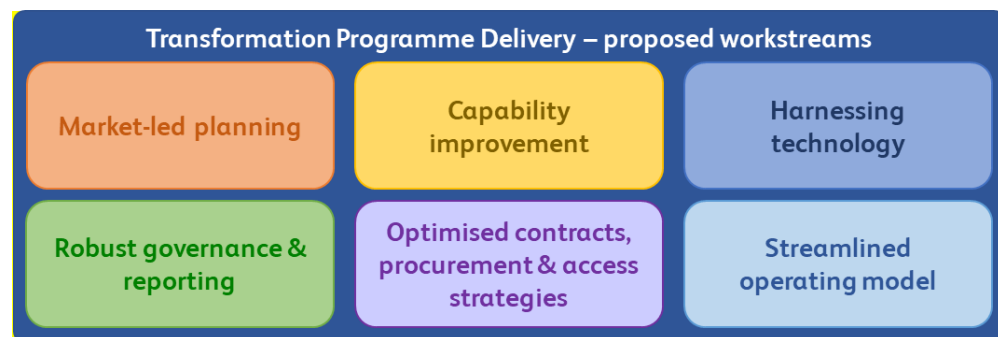
Further work is ongoing to refine and validate the opportunities identified under each workstream.

Our CP7 efficiency plans include:

Market-led planning

For Scotland's Railway, being market-led is defined by the following principles:

1. Establishing strategic corridors across Scotland through drivers such as socioeconomic, commercial and sustainability.

2. Utilising drivers to support and inform all investment decisions across our assets.

3. Developing collaborative, integrated plans across our business functions and with the wider rail business in Scotland.

The key initiatives under this workstream include:

- Market-led corridor output specification
- Value-based investment prioritisation
- Outcome-based specifications
- Industry-level profit and loss focus
- Multidisciplinary project development
- Geographic and work-type bundling, including integration with enhancements.

Capability improvement

We'll develop our asset management capability to align to the planning approach and are undertaking a capability assessment and defining a target state to determine initiatives and opportunities. In order to embed market-led planning, we've identified the need to make changes to various elements of our processes, organisation, technology and information and culture.

This comprises two key themes; training to develop our organisational capability and investing in process improvement to drive efficiency.

The key initiatives under this workstream include:

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- Asset management capability development

- Increased application of standardised design

- Agile principles.

Harnessing technology

We'll adopt new technology to improve processes and drive efficiency improvement through better management of assets. This comprises both collecting and managing new data as well as harnessing existing data to enable better decisions.

The key initiatives under this workstream include:

- Remote condition monitoring

- Shared survey data platform

- Safer, faster isolations (automating)

- Traffic management systems to improve train service delivery

- National initiatives (including intelligent infrastructure)

- Digital, Information Management, and Asset Data Strategies.

Robust governance and reporting

Streamlining governance processes will enable us to improve efficiency and drive cost out of the business through improving the design assurance process, redesigning the financial approvals process, and developing a single reporting platform to remove duplication and consolidate activities.

The key initiatives under this workstream include:

- Engineering design assurance process revision

- Streamlining financial authority processes

- Single reporting platform, including insights and analytics.

Optimised contracts, procurement and access strategies

Optimised contracts, procurement and access across the railway will enable us to drive efficiency improvement through leveraging economies of scale and appropriately packaging works. This includes a clear and consistent approach to contracting and how to deliver, developing a tailored access strategy to capture, integrate and optimise the strategic disruptive access requirement across Scotland's Railway. This will drive industry-wide efficiencies by developing a framework impacting cost, schedule, risk, safety and lost opportunities.

The key initiatives under this workstream include:

- Tailored access strategy

- Decision Impact Assessment Model

- Bulk purchase of commodities

- De-vegetation programmes

- Consolidated land and consents strategy.

Streamlining the operating model

A streamlined operating model that develops an effective organisational structure for the railway in Scotland as a whole is a key part of our efficiency programme. This means looking beyond our own organisation and working in a more collaborative and integrated manner, particularly with ScotRail Trains. We'll incorporate new ways of working to streamline processes, delivery, and reduce the cost to deliver capital works.

The key initiatives under this workstream include:

- Optimise our delivery model

- Greater use of the 'High Street' working environment

- Strategic property opportunities

- Track renewals optimisation.

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Other enablers

We'll continue to work with network-wide functions, including Route Services and Technical Authority, to identify and implement opportunities from network-wide led programmes, as well as research, development, and innovation activities.

Track and train working together is a key enabler for our CP7 efficiencies, not simply through changes to the industry, but through a more collaborative mindset which considers whole-industry cost and seeks to make smarter decisions with better information on their overall financial impact.

Our efficiency plans for CP7 will continue to be planned and managed through our established Fishbone efficiency measurement framework, clearly communicating where the opportunities for efficiency will be found and delivered.

4.4 Management of risk and uncertainty

Introduction

This section provides an assessment of the financial risk and uncertainty Scotland's Railway faces in CP7, together with a comparison of our proposed level of risk funding against our main drivers of uncertainty.

What are the benefits of a structured and proactive approach to managing financial risk?

Assessing financial risk and establishing appropriate arrangements to manage it is a significant topic for every periodic review, as it is in every regulated company. Network Rail differs from other regulated companies in two main ways. Firstly, the majority of our funding is set in cash terms, meaning we bear inflation risk, or benefit from lower inflation compared to forecast, during the control period. Secondly, as a public sector arms-length body, we have no recourse to private capital (equity or debt) in the face of more challenging financial circumstances.

Our experience has also shown circumstances during a control period can vary significantly from original expectations. This can be due to events like storms, floods, landslides, industrial action, and other factors where it does not make sense to plan or lock in all funding at the outset, and where there is no efficient insurance market. There are also performance factors such as train disruption and access restrictions that can have cost implications but cannot be planned into the base business plans without creating planning slack, unless adequately controlled.
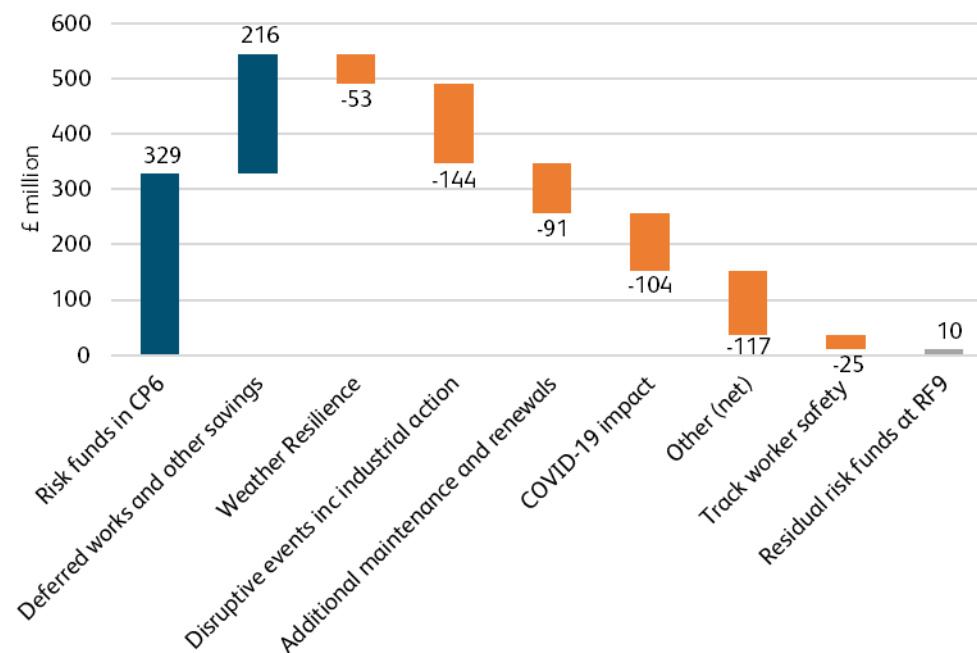
Use of the risk fund in CP6

An initial risk fund of £329 million was set aside for CP6. Our most recent analysis of the use of CP6 risk funding, updated for Period 9 of 2022/23, forecasts Scotland's Railway will utilise £545 million of risk funding in CP6 compared to the £329 million set aside for CP6 for activities that weren't in the original business plan. This includes the disproportionate impact from the global COVID-19 pandemic, which resulted in a net cost of £100 million for Scotland's Railway.

Figure 4.4 shows as at RF9 FY23, we've used £535 million risk funds in CP6, with the initial

fund increased primarily through deferred works.

Figure 4.4: Use of CP6 risk funding in cash prices

The use of the risk fund has effectively been supplemented by additional contributions, including deferred renewals, reductions in business rates and central charges, inflationary increases in variable income and workforce reform efficiencies.

Analysis of the use of CP6 risk funding has identified the following main categories, or drivers, of unplanned costs:

- COVID-19

- Scope changes

- Weather events and resilience

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- Unachieved efficiencies, a large component of which is due to delivering a reduced volume of renewals

- Disruptive events (Schedule 4 and 8)

- Inflation.

In addition to the main drivers listed above, there are a broader range of individual lower value items in our analysis totalling around £150 million.

Improvements in managing risk in CP6

Over the course of CP6, we've made improvements in the record-keeping, transparency, and routine reporting of our use of the risk fund. This has improved the shared understanding of the nature and impact of risks we face. Improved analysis and reporting have been further supplemented in CP6 by including an enhanced assessment of emerging risks and opportunities not yet sufficiently crystallised to be included in our forecast.

Key drivers of risk in CP7

We've identified the main drivers of risk and uncertainty we expect to face during the next control period. These include the impact of abnormal or extreme weather and other serious incidents, potential costs from the performance regime (Schedule 8), higher than forecast inflation, and the risk of missing our stretching forecast efficiencies. Based on our high-level assessment of each of these key drivers, we assess that in total these drivers of risk could lead to around £250 million of additional cost in CP7. Table 4.5 summarises the main risk drivers and provides an approximate financial impact if that risk materialised in CP7.

Table 4.5: Drivers of CP7 financial uncertainty

Risk	Description	Indicative value
Inflation and input prices	Inflation in CP7 is materially higher than assumed in the SoFA, leading to higher costs	Around £70 million, based on the difference between inflation assumptions used in this plan and the higher, May 2023 Bank
		of England forecast. Noting this could be even higher if inflation remains stubbornly high across CP7
Train performance and Schedule 8	Train performance is lower than forecast and/or ORR set unrealistic performance regime (Schedule 8) benchmarks. Alongside reputational risk there is a financial consequence through Schedule 8	Around £50 million Schedule 8 costs if performance is in line with CP6
Efficiency	Efficiency plans not delivered in full. Opex efficiencies targeted are 10 % by the end of CP7 (£136 million) and capex 15 % by the end of CP7 (£243 million) over CP7	Around £60 million if efficiencies are 2 % lower than plan
Weather resilience and climate change	Weather related incidents cause high levels of service disruption, cost (asset repair, Schedule 8), and reputational impact	Costs assumed captured in other lines in this table
Workforce reform	Objectives not achieved (given initial aims on maintenance modernisation in CP6) with adverse impact on delivery, cost/efficiencies, and industrial relations	Around £15 million based on delivering less than half of the benefits
Safety	Unanticipated safety issues arise in CP7 that we have to divert funding towards – for additional Opex/capex	Around £25 million for potential additional Opex/capex (including any 'task force') or standards changes driven by ORR – based on CP6 experience

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Risk	Description	Indicative value
CP6 exit	Failure to exit CP6 as planned (e.g. maintenance backlog, train performance) puts extra pressure into CP7 plans (financial and outputs)	Around £10 million for additional Schedule 8 and maintenance (impact from CP6 feeding into CP7)
Rail industry transition	Funding, outputs, and wider regulatory framework decisions in PR23 hinder the smooth transition of Network Rail in terms of regulatory obligations for infrastructure	Captured by other lines, for example, train performance if impact on operational performance; efficiencies become more challenging to achieve; and reputational impact if it leads to delays in transition

Inflation assumptions

Historically, Network Rail's regulated charges and government grants were adjusted for outturn inflation in each year of a control period. This is the conventional approach taken by most economic regulators, which recognises organisations have limited control of the price inflation they face. However, following the reclassification of Network Rail in 2014, around two thirds of our income is fixed in cash prices through the SoFA, the remainder being index linked, principally through the income we receive from passenger and freight train track access contracts. This approach means we're exposed to financial risk during the control period if inflation is materially higher than the forecast used when the SoFA is set. The converse is we would make a windfall gain if, all other things equal, inflation was materially lower than assumed.

To give a sense of scale of inflation risk, we estimate that where annual inflation is one percentage point higher in each year of CP7 than forecast, this equates to higher cash costs, or a further efficiency stretch, of around £100 million over the five years of our plan.

The SoFA used Office for Budget Responsibility inflation forecasts from November 2022. These forecasts were produced alongside the Chancellor's Autumn Statement for the UK Government during a period of significant economic uncertainty towards the end of

2022. Office for Budget Responsibility November 2022 forecasts suggested inflation at the start of CP7 (i.e. in 2024/25 and 2025/26) will be negative, meaning general prices in the economy would fall. This was a material change from Bank of England forecasts during 2022. Using Office for Budget Responsibility's November 2022 inflation forecasts to calculate SoFA funding had the effect of reducing our cash funding settlement by £171m in cash prices compared to using the Bank of England's November 2022 forecast, which was published just before the autumn statement.

The Bank of England's May 2023 forecast suggests that inflation won't fall as low as Office for Budget Responsibility predicted in November. Given the short period of time before the finalisation of our plan, we've been unable to fully assess the impact of the latest Bank of England forecasts on our detailed plans. However, based on our high-level analysis, we estimate the impact on our costs, net of income, would be an additional £70 million if the latest Bank of England forecast is a more accurate reflection of CP7 inflation.

We'll continue to update our plan to reflect the latest view of inflation to understand the scale of any funding gap and implications for our risk management approach and CP7 plan.

Our assessment of risk in the CP7 plan

Our overall CP7 plan reflects the best estimate of the cost of delivering the outputs we set out in our individual plans, and the income we expect to receive. We've also estimated the additional level of risk funding required to increase the likelihood of delivering the outputs to 50 % (P50) and 80 % (P80) confidence levels. To achieve this, we've undertaken a Monte Carlo style simulation analysis of our Strategic Business Plan against a number of risk factors.

Overall, our scenario ranges fall within the same parameters modelled by other parts of Network Rail. However, due to the constrained financial nature of our business plan, the scenarios modelled include relatively few upside or 'high' projections and therefore the spread of scenarios is more weighted towards downside or 'low' projections.

This outlook is because our plan:

- Adopts an affordability-driven approach to renewals investment, prioritising the highest safety and reliability related projects, to limit the costs in the next five-

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year period. Therefore, there's very little or no opportunity to defer planned renewals to free up any additional funding

- Assumes an ambitious efficiency programme of £380 million with a high level of dependency on our ability to achieve step-change and with less scope to deliver efficiencies due to lower volumes

- Adopts an approach in its design and development to do only what is absolutely necessary, with few, if any, 'discretionary' activities that could be easily deferred or further pared back

- Is more likely to continue to be disproportionally impacted by climate change and weather-related events.

Our risk funding as Scotland's Railway is also not 'pooled' with the other Network Rail regions in England and Wales, so it's unable to benefit from the portfolio effect of 'spreading' or sharing risk across a much larger business.

Based on the modelling undertaken to date, a risk fund of £301 million would equate to a around P50 plan, including the inflation risk between Office for Budget Responsibility and Bank of England projections.

A P80 plan, or 80% probability of successfully delivering the plan, would require a risk fund of between £263 million excluding inflation risk and £465 million including inflation risk.

Input prices

Our forecasts of CPI inflation are important, but the basket of goods and services that Network Rail buys isn't well reflected by general price inflation, for example. CPI or RPI, so we also assess how the specific inflation we face, or 'input prices', tracks CPI.

We have an established methodology for identifying our input prices drivers, which builds on the work undertaken in PR18. We assess input price inflation by analysing our different cost lines and then applying specific indices to each of these costs.

Our analysis identifies a likely additional increase in Opex costs of around £80 million based on our revised input price inflation assumptions, which could be partly offset by a saving of around £30 to 40 million on Capex.

Approach to managing financial risk and uncertainty in CP7

We propose that the risk funding value of £301 million is held as a provision for overall financial risk at this stage in the planning process.

The majority of the risks facing Scotland's Railway are of an operational nature, and it would not be appropriate, or a desirable position, for the funder to take on the responsibility for managing operational risk. Therefore, it's proposed that the risk fund continues to be managed directly and in the control of Scotland's Railway, subject to the formalisation of the enhanced reporting and engagement regime introduced during CP6, including the identification and reporting of emerging risks and opportunities.

Risk funding should not be used as a source of funding for any future changes to scope and we'd seek to discuss any such proposed changes with Transport Scotland through our governance meetings. This includes any use of the risk fund required by changes to the agreed assumptions on the decarbonisation programme, which have been clearly stated elsewhere in this plan.

We also propose further discussion would be required in the event of any future 'force majeure' type events, such as another global pandemic, major sustained storm damage, or inflation continuing to run significantly above projected rates, and that any additional related costs wouldn't automatically fall to the risk fund but would instead lead to discussion and agreement being required on the trade-offs necessary to accommodate those costs.

Due to the approach taken to building our plan, we've not been able to identify any significant volumes and associated costs that could reasonably be deferred in CP7 if more risk materialised than expected, and therefore at this stage we're unable to present a risk-adjusted plan.

If more risk materialised than expected, this would have significant consequences for the safe, reliable and efficient running of the railway and could therefore result in:

- A further reduction in asset condition, measured by the CSI

- An increase in service-affecting failures

- A decrease in train performance

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- A decrease in efficiencies.

Our mitigations against risk

We've assessed the level of financial risk and uncertainty in our CP7 plans and have an approach to managing risk when it arises. However, we do have mitigations already in our CP7 plans that, to a varying degree, help to minimise the likelihood of risks arising. For example, these mitigations include:

- Ongoing cost control and our commercial and procurement strategy to maximise value for money from our funding

- Headwind provisions in our plans to reflect expected, but as yet unidentified, activity during the control period

- Monitoring the latest inflation forecasts and continued discussion with Scottish Government/Transport Scotland on arrangements for risk management and financial flexibilities, which have not yet been agreed for CP7

- Developing a robust and resourced CP7 Delivery Plan with effective governance

- Strong industry alignment and collaboration, with track and train working together to underpin meaningful outputs with train operators

- Working with ORR ahead of CP7 to set realistic regulatory baselines for ORR's monitoring and for Schedule 4 and 8 parameters, in particular Schedule 8 benchmarks, drawing on our output forecasts based on our risk-adjusted plan

- The timely delivery and implementation of necessary enablers, for example, technology programmes, across Scotland's Railway

- Better weather forecasting through our operational weather desk, providing operational capability, and asset information to help us make more informed decisions about where to focus resources

- Rapid and effective response to incidents on the ground to recover train service and repair infrastructure.

Chapter Five – Assurance and deliverability

5. Assurance and deliverability

5.1 Assurance

We recognise the importance of taking additional steps to satisfy ourselves, and our stakeholders, that our plans are robust. The implementation and delivery of which will be supported by good management information and assurance to enable us to adapt our delivery plans. The evidence and analysis that sits behind our CP7 plan has been built up over the last 18 months, developed through a series of six iterative planning rounds. This has proven to be an effective framework to embed best planning practice across our business, both from a Scotland's Railway perspective and for the Network Rail support functions. Our iterative approach has also allowed us to adapt plans and respond to the latest information, which has been particularly important, given the wider uncertainty and current financial context.

Our planning framework has allowed us to move from plans developed on a 'top-down' basis, through to a robust, well evidenced 'bottom-up' plan in 2023. Our iterative planning approach and assurance process allowed us to identify a number of priority areas for improvement over successive planning rounds. We also reviewed the needs of Transport Scotland and ORR so that any of their key focus areas had sufficient coverage.

Our assurance framework

In addition to the work carried out by colleagues network-wide, review and discussion with the Chief Financial Officer and Board, set out in the Assurance section of the England and Wales Strategic Business Plan, Scotland's Railway has used this process as an opportunity to evolve and improve management information to help control risk and support overall plan deliverability and assurance. Given the broader uncertainties, it's important that the delivery plans are robustly assured and that as part of this process we develop clear early warning indicators to adapt the plan to address uncertainty. To address this, we've added additional assurance and governance processes to supplement our planning framework, meaning we're testing deliverability and providing robust management information and assurance. We're also adapting our plans to meet our stakeholders needs and embed continuous improvement and learning.

Specifically, we've carried out a risk and assurance review to understand the approach to risk and control management. We considered as part of this process:

- Each area's plans and assumptions

- Whether there were any gaps in the plans which could introduce delivery risk

- Risk identification, analysis, evaluation, monitoring and reporting/escalation processes, and governance

- Interconnections between plans

- Control assessments, current assurance plans, and planned governance

- Recording and reporting, the use of data analytics and tracking of key metrics, and any Early Warning Indicators (EWI)

- Steps required to implement improvements.

This work has identified some opportunities to improve resilience by undertaking additional work which is underway and developing further control measures and EWI's to improve management information and decision making. This will allow us to respond quickly to emerging risks to the delivery plans and act on any opportunities identified.

This work will provide clear governance and accountability and the agreed risk mitigations will be monitored regularly, underpinned by a defined and documented RACI (Responsible, Accountable, Consulted, Informed) matrix. In addition, we'll define and track key data points as EWI's at an assumption level across the whole plan. This will support overall plan delivery by providing us with a comprehensive list of risks, controls, and support appropriate and meaningful assurance to enable us to deliver for our passengers and customers.

This work is ongoing and will continue as we move into finalising our CP7 plans.

Managing change

We've commenced engagement with ORR in relation to their Managing Change policy, and their consultation on the policy for CP7. In a time of such uncertainty, a flexible and proportionate process for transparently managing changes as they arise is key. This is

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complementary to how we manage and mitigate risks to our business. We've already identified changes, such as investment decisions Transport Scotland may make on large scale enhancement projects, which would change the scope and potential cost of our business plan. We believe these aren't risks, but positive investment opportunities Scottish Ministers may choose to make, with the impact on operations, maintenance, and renewals managed in a transparent and proactive manner.

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5.2 Deliverability

This section addresses the following Scottish Ministers' HLOS requirements:	
Topics covered	**HLOS references**
Contracting strategy	3.43 (contracting strategy)

Project delivery

In reviewing the deliverability of the CP7 core renewals plan we considered each of the Asset Management Strategies and assessed the type of volumes and interventions that underpinned each plan. This allowed us to identify and validate the appropriate unit rates applied to the specific volumes and highlight the key cost drivers and risks that underpinned each plan. We also undertook a review of the spend across the work type categories (e.g., track, signalling, and buildings) to determine if the current Scotland supply chain had the capability and capacity to deliver the plan.

Following our assurance reviews, we remain confident that with our strong internal delivery capability, as well as deeper collaboration with supply chain, and embedding our learning from previous control periods, we can successfully deliver the planned renewals outcomes within the given constraints of time, cost, and quality.

Learning from CP6

In CP6 we continue to deliver some of the lowest network wide unit rates, particularly around our earthworks assets, and continue to embed best practice and enhance our strong record of delivering planned renewals and enhancements.

We'll continue to build on this and better integrate our delivery teams with our asset teams, deliver our strategies for maintenance, and focus on areas where we can and must do better.

Our assurance reviews identified some common themes that impacted our ability to drive efficiency into our cost and schedules in CP6 and are areas we're targeting as part of our incremental efficiency plans for CP7. Themes include:

- Maximising the access we book and improving possession and isolation management processes to get on and off site more efficiently

- Undertaking earlier walkouts and delivering targeted de-vegetation programmes to identify asset condition earlier

- Improvements in timing around client remits

- Addressing asset-to-asset integration opportunities earlier in the workbank planning phase

- Improving our land and consents strategies and building more time into programmes to drive value across rail corridors

- Continuing to focus on improving our quality assurance and hand back processes

- Improving our communication with external stakeholders including our customers, train operators, and lineside neighbours.

Contracting strategy

In developing our CP7 procurement model we undertook significant levels of market engagement which confirmed we have sufficient market interest and competent resources in our supply chain to deliver the core renewals plans.

We already have close engagement with our supply chain, and over CP6 they've demonstrated they can work in partnership with us to deliver efficient outcomes for Scotland's Railway. Collectively we recognise the challenges ahead of us and support the need for industry change. Our supply chain is also keen to be part of and help drive this change.

Listening to industry feedback throughout CP6 has been important for us, and our regular engagement with industry bodies such as Rail Industry Association (RIA), Civil Engineering Contractors Association (CECA), and Rail Cluster Builder (Scottish

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Engineering) helps us better understand the challenges the supply chain continues to face.

In listening to feedback, we recognise that closer alignment and focus on creating job stability are key enablers to drive the best outcomes for Scotland.

A key area of focus is also around recognising the importance and value our Small to Medium Enterprises (SMEs) bring to creating a sustainable and safe supply chain to deliver job security in Scotland and we'll continue to promote and engage at SME forums and provide effective mediums for SME communications.

We'll also continue to work with Tier 1 supply chain and industry bodies to promote timeous and well-advertised forums (meet the buyer days) to engage and open opportunities to local supply chains.

Increased certainty in future workbanks also alleviates risks associated with skills shortages in the industry, and improved visibility of our workbank pipelines means suppliers are more able to invest in and attract and retain key skills.
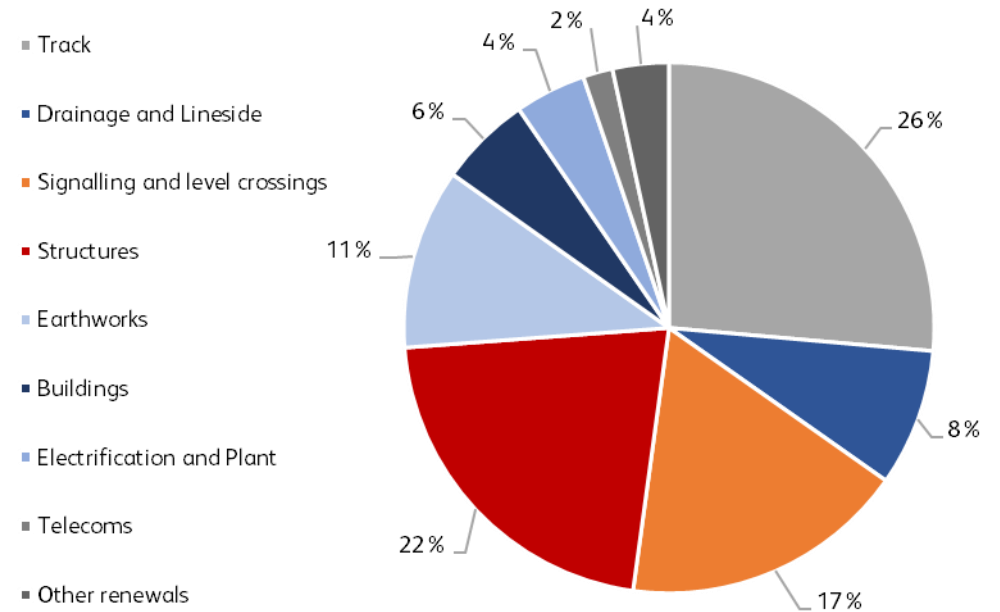
Our Contracting Strategy focuses on embedding strategic partnerships with the supply chain, as well as considering areas where we can develop our inhouse delivery capability to deliver more efficiently. We've taken this approach in CP6, and our Works Delivery function has successfully managed the delivery of the less complex refurbishments as well as the reactive works and asset condition surveys.

Our Works Delivery function will also continue to deliver minor signalling, telecoms, and electrifications and plant interventions using our internal workforce and deliver significant volumes of vegetation clearance activities.

Our strategy is also underpinned by the desire to bring the best people in the industry together, to work collaboratively and flexibly, and retain a sustainable and inclusive supply chain base in Scotland.

CP7 Renewals Workbank

Figure 5.1: Spend Categories across Assets (pre- efficient)

Legend:
- Track
- Drainage and Lineside
- Signalling and level crossings
- Structures
- Earthworks
- Buildings
- Electrification and Plant
- Telecoms
- Other renewals

Values shown: 26%, 8%, 17%, 22%, 11%, 6%, 4%, 4%, 2%

Continuous improvement and efficient delivery

Our plans already incorporate areas of improvement from CP6, with a greater understanding from both asset and delivery teams on the importance of producing realistic phasing of volumes across the control period to avoid the peaks and troughs on demand that could adversely drive unit rates and reduce certainty around meeting delivery milestones.

The focus on phasing of volumes also allows the delivery teams to put earlier emphasis on developing the appropriate outcome for each intervention and earlier visibility (and management) of risks and opportunities.

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The Strategic Business Plan recognises that more of our network will continue to be electrified in CP7, and close alignment with the rolling programme of decarbonisation, and integrating development programmes, will be an important enabler for delivering at a lower net cost.

Our investment and focus on PACE (Project Acceleration in a Controlled Environment) and taking a more streamlined approach to project development, as well as driving innovation and technology are key areas we'll embed as business as usual in CP7.

Access planning in CP7

For the CP7 plan, having an 'industry cost approach' has been an area of focus, and the development of cohesive access strategies that balance continued provision of services to customers during the construction phase of major works will be a priority. Our new Access Development Programme in Scotland brings together three programme teams to plan for CP7 and look ahead to CP8 with a focus on optimising access and driving efficiencies.

Our Access Planning Team (responsible for the Engineering Access Statement process); our Integrated Planning Office (IPO within Capital Delivery); and our Customer Experience Team (responsible for bringing the customer focus to planning decision making) will all link into the ongoing workstream to promote a corridor wide delivery strategy and adopt a line of route focus to capture renewals, maintenance, enhancements, and critically, rolling stock deployment.

Supply chain integration and managing our critical resources

Our delivery strategy requires supply chain integration and closer collaboration in CP7 to reduce the duplication of scarce and costly resources and continue to foster a 'one team' approach to deliver planned outcomes.

It's essential that critical resources align to the CP7 plan, and we keep track of the resources available via Network Rail's Supply Chain Operations (SCO), and influence how they control their fleet and materials management for key commodities such as rail, sleepers, and ballast to benefit Scotland.

As part of the deliverability review, we considered critical resources, and didn't identify any gaps which could adversely impact the Strategic Business Plan.

The integration with our SCO team reviews will let us identify any critical national resources and resolve conflicts early (e.g., demand for Kirow cranes, or clashes with demand on signalling testing resources). We'll continue to engage with the consolidated national planning process as our CP7 workbank matures.

Driving sustainability into delivery

Driving sustainable outcomes through delivery is a key area of focus for us and includes areas such as:

- Undertaking targeted social value initiatives to benefit communities
- Increasing focus on employing the use of the Rail Carbon Tool
- More use of solar harvesting around reducing fuel consumption
- Product innovation.

Readiness for CP7

The maturity of the CP7 workbank will continue to improve and we'll see more granularity of the workbank for the latter years of the next control period, and more site walkouts to support this development. We'll also continue with our market engagement and deliver the necessary procurement activities to support the transition into CP7.

The necessary focus will also be on advancing the line of route strategy to enable the corridor wide opportunities and let us deliver the synergies across assets, maintenance, and enhancements. The corridor approach will let us get ahead with early and effective management of land and consents and enable earlier engagement with our train and freight operators and lineside neighbours impacted by our delivery interventions.

There are some challenges that we're monitoring closely, such as the impact of CP6 deferrals on workbank stability, retention of skilled resources, and the ongoing impact of industry-wide financial and inflationary pressures on labour, plant, and material costs.

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Approach to costing the plan

We undertook cost and volume reviews with both our asset and delivery teams to better understand the alignment between our organisations and so we understood the type and volume of interventions, and maturity of the workbank. This is important as some types and volumes of interventions are different to CP6, particularly around earthworks and track.

We also focused on the identification of key cost drivers, risks, and opportunities, as well as areas where we can build efficiency opportunities into each asset category.

Unit rates that underpin the plan

When building up unit rates we considered the key cost drivers that influence unit rates:

- Do we have a robust and reliable data source for works delivered in CP6?

- Do we fully understand the complexity and location of the interventions and how they compare to the CP6 workbank types?
- Is the CP7 workbank defined to an adequate level at the current stage of business plan development?

- Is access a specific cost driver for a specific asset?

- Do we have a planned delivery agent and route to market?

- Do we have any key critical resource challenges relevant to the asset?

When costing the plan we applied granular level estimates to a significant amount of year 1 of the CP7 interventions already in development, and they've been priced by our current supply chain.

For the majority of the future CP7 workbank we applied CP6 exit rates that were then spot checked by supply chain as part of our cost planning assurance process.

For some minor signalling, telecoms and electrification and plant assets where we had limited experience of delivery of specific interventions in CP6, we applied a Network Rail central unit rate that was validated by our local supply chain partners.

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Table 5.1: Data Source for unit rate validation

Asset	Supplier of Cost	Basis of cost	% of asset covered
Electrification and Plant	Capital Delivery and Works Delivery	*Mix of data sources* Scotland's Railway unit rates (CP6 exit rates) built up from recent previous projects with application of inflation for core plan. Network Rail central unit rates used where we have no recent experience of delivering certain work types.	100 %
Telecoms	Capital Delivery and Works Delivery	*Mix of data sources* Scotland's Railway unit rates (CP6 exit rates) built up from recent previous projects with application of inflation for core plan. Network Rail central unit rates used where we have no recent experience of delivering certain work types. (Batteries and CCTV cameras).	100 %
Signalling and Level Crossings	Capital Delivery and Works Delivery	*Mix of data sources* Scotland's Railway unit rates (CP6 exit rates) built up from recent previous projects with application of inflation for core plan. First principles and bottom-up costings on major signalling schemes using new Signalling Equivalent Unit (SEU) rates. Network Rail central unit rates used where we have no recent experience of delivering certain work types. (minor signalling and level crossings).	100 %
Buildings	Works Delivery	*Mix of data sources*	100 %
		Scotland's Railway unit rates (CP6 exit rates) built up from recent previous projects with application of inflation for core plan. Budget estimates developed using actual project costs from similar projects in CP6.	
Structures	Capital Delivery and Works Delivery	Scotland's Railway unit rates (CP6 exit rates) built up from recent previous projects with application of inflation for core plan.	100 %
Earthworks	Capital Delivery and Works delivery	Scotland's Railway unit rates (CP6 exit rates) built up from recent previous projects with application of inflation for core plan.	100 %
Drainage and lineside	Capital Delivery and Works Delivery	*Mix of data sources* Scotland's Railway unit rates (CP6 exit rates) built up from recent previous projects with application of inflation for core plan. Drainage is a new "asset category" and most drainage work in CP6 was combined with earthworks interventions. New unit rates developed for drainage in CP7.	100 %
Track	Capital Delivery and Works Delivery	*Mix of data sources* Scotland's Railway unit rates (CP6 exit rates) built up from recent previous projects with application of inflation for core plan. First principles and bottom-up costings applied on new work type sites.	100 %

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Improving our cost benchmarking

CP6 saw progressive improvements in our cost benchmarking capability and in the collection of robust cost information at a more granular level for most of our key assets.

We're committed to improving our systems and reinforcing our approach to improving cost control and benchmarking and building a culture of accountability across Scotland's Railway to provide informed answers to what rail works 'should, will cost, did cost and why' in CP7.

There will also be ongoing focus on capturing costs in an efficient manner and increasing the proportion of monies directly spent in delivering the asset. i.e., the cost of the physical work delivered (direct expenditure on labour, plant, and materials).

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5.3 Governance

Our governance framework

We understand that to develop a robust plan we need to take direction from our Executive and provide assurance to our Board.

To support the development of the Strategic Business Plan we've put in place a governance process that reaches up to Board level. This has enabled us to progressively engage internally, allow us to have points of escalation, identify key risks, and seek decisions on the programme direction when needed. This has been supplemented by a PR23 Steering Group for Scotland that brings together Network Rail, Transport Scotland and ORR to oversee progress and provide a point of escalation.

We've also engaged consistently throughout the development of our plans with Network Rail's Executive Leadership Team. To support the decisions required in the planning process we set up a specific 'periodic review 2023 Executive Leadership Team sub-committee'. This has enabled regular and focused engagement with members of Executive Leadership Team on periodic review 2023-related matters.

To support our plan development and to keep the Board informed, we also established the 'Board periodic review 2023 sub-committee' as part of our formal governance structure. This has enabled the Board to engage with and endorse our Strategic Business Plan.

Scotland's Railway governance

In developing our Strategic Business Plan, we've iteratively developed and evidenced our CP7 plans over the last two years. Our governance process has been central to our submissions to ORR, as well as our contributions toward network-wide submissions, with appropriate levels of ownership and scrutiny from Senior Responsible Owners.

The governance process closely follows the assurance framework discussed in section 5.1, providing additional executive oversight and a review of our outputs at critical stages of our plan's development. The key elements of our process were as follows:

- **Circulation of guidance:** Guidance was circulated by Network Rail's Planning and Regulation team following the Programme Senior Responsible Owner review.

Updated iterations were provided when new information was available. In total, four iterations of the guidance were circulated. Scotland's Railway varied from this guidance where Transport Scotland's strategic objectives required different assumptions, such as freight growth

- **Challenge panels:** Each business area brought their plans to a Scotland's Railway Executive level challenge panel to be presented and challenged. Changes following these panels were made to the plan

- **Strategic Business Plan sign-off:** Upon completion of each business area's inputs to the Strategic Business Plan, the content was submitted to the Scotland's Railway Executive for final review and approval.

Chapter Six – Next Steps

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6. Next Steps

The PR23 process is due to continue following the submission of this Strategic Business Plan. We received ORR's Draft Determination on 15th June and as we look to respond to this and begin to mobilise the plan in the coming months, we expect to:

- Further develop our performance plans with ScotRail Trains and other operators. This will require ongoing industry engagement, including with Transport Scotland and ORR and specifically requires urgent, sustained, and significant investment in the ScotRail rolling stock fleet

- Develop a more detailed transformation programme to deliver the full value of efficiencies which that are set out in this Strategic Business Plan

- Conduct more intensive engagement with the supply chain and begin to tender new frameworks for CP7 to provide further assurance on the deliverability of this business plan

- Monitor the estimated impact of updated inflation forecasts as they're published. We'll look to continue providing regular updates to ORR on the impacts of inflation to our plans

- Conduct further stakeholder engagement with a wider set of stakeholders and in particular organise a series of stakeholder challenge panels to seek feedback on particular topics

- Engage with our people and communicate to them, in a clear and concise way, the vital role that they will need to play in delivering this Strategic Business Plan.

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Annex

Annex 1 – Assumptions

This Strategic Business Plan has been developed based on a set of planning assumptions. This chapter sets out the detail of the assumptions upon which the plan was built for transparency.

Assumptions table

Our financial and non-financial assumptions are realistic, and evidence based.

Table A1: Financial Assumptions

Area	Assumption
Price Base	• Constant price basis (FY24) using Consumer Price Index
Inflation	• Office for Budget Responsibility (OBR) inflation forecasts from November 2022, with a separate update included to reflect the changes in the March 2023 OBR inflation forecasts. CPI inflation is currently at just under 9 %, however the Office for Budget Responsibility inflation forecasts predicts negative inflation in 2025 with inflation below 2 % in 2026, 2027 and 2028 returning to 2 % in 2029
Input Price Inflation	• Specific rates have been applied and on average: ○ Opex: 0.49 % ○ Capex: 1.88 %
Efficiencies	• 15 % of Capex savings by year 5 of CP7 • 10 % of Opex savings by year 5 of CP7 • Assuming overall NR efficiency savings of £380 million

Area	Assumption
Headwinds	• Headwinds profile assumption of 0.6 % p.a. for Opex and 0.4 % p.a. for renewals headwinds over CP7
Income	• CP6 charge rates (in 2023/24 prices)
CP6 Exit Position	• CP6 exit position based on business planning submission, FY23 RF9.

Table A2: Other planning assumptions

Area	Assumption
Enhancements	• Only assume enhancements past Final Business Case (or equivalent)
Freight Traffic	• We've assumed a net 8.7 % increase in net tonne kilometres in Scotland's Railway based on "bottom-up" knowledge of both the Scottish logistics market and the network capability and capacity of the Scottish rail network
Passenger Traffic	• We've identified the assumed train service levels at the end of CP6 and the end of CP7 for each of the eight strategic corridors across Scotland's Railway
Passenger Demand (footfall)	• Passenger demand (footfall) is expected to enter CP7 at 75 % of pre Covid levels with an expected 1.5 % increase for each year of CP7 exiting CP7 at ~80 % of pre Covid levels

Alignment to enhancements and other assumptions

We've developed a market-led approach to planning our business which demonstrates how we'll contribute towards the Scottish Government's net zero commitments so that more people and businesses choose rail, improving value for money and reducing the net cost of the public service we provide. For business planning purposes, this can be articulated in terms of train services and infrastructure capability we need to plan for across CP7, for each rail corridor in Scotland, and is built upon the foundations of Scottish Government policy. It's been developed with the rail industry across Scotland and has been endorsed by Scotland Investment Review Group, which includes representatives from ScotRail Trains, cross-border passenger operators and freight operators.