

Anglia Route Strategic Plan

19th January 2018 v2.2

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1. Foreword and summary

Anglia route runs some of the most important rail infrastructure in the UK. Our services connect millions of people to city, town and country in a fastgrowing region which is vital to the City of London, and a gateway to three major UK ports and airports in London and the South East.

Investment in rail infrastructure in Control Period 6 (CP6) is critical to power economic growth and to make Anglia a place where people want to live, work and invest. This submission sets out a detailed plan to underpin this growth and help realise the investment being made by our partners and stakeholders. The right level of investment in CP6 will move us towards providing a high performing railway that will improve passenger experience in this diverse and growing region.

However CP6 brings significant challenge to the route, with even greater capacity demands on the network. In the 10 years from 2013-2023 the Great Eastern Main Line from Norwich to London is expected to see 32% growth in passengers in the outer areas and 52% in the inner commuter area. Even with the Elizabeth Line to partly manage this demand, it is an extraordinary increase. A complete replacement of Greater Anglia rolling stock by 2020, new stations, and an increase in services across the region supported by new timetables; all mean that the route will be stretched to maintain and improve performance.

We must deliver even more in CP6 to provide the same robust level of performance we do today. We are building on a solid base of improvements through CP5, having delivered efficiencies in our operation, and improved our ability to deliver work items with better access and cost planning. However, an ageing asset base and deferral of some renewals from CP5, means an unprecedented level of renewals and refurbishments coming together in CP6 as well as the need to lay foundations for the successful rollout of a wider digital railway in CP7. While the number of trains on time is forecast to stabilise, passengers will benefit from faster, more frequent services, carrying more people to where they want to be.

We recognise the need to maintain the delicate balance between stakeholder priorities, funding and engineering access required to deliver the work. The way in which we have approached the development of this plan reflects this. Our stakeholders have acknowledged a step-change in how we have collaborated with them in the planning of this submission. We have held 30 sessions with over 30 stakeholder groups since March 2017 to develop a plan that balances their needs and priorities whilst ensuring value for money.

We have joint plans in place with train and freight operating partners to enable us to build on our current day-to-day performance. We are committed to proactively work with stakeholders in the access planning process to inform how the plans are to be delivered in 2019-2024.

This submission incorporates a base plan to progress towards asset policy compliance, safety improvements and performance stability for £2,164.3m. We are also proposing an additional business case for the provision of traffic management technologies to deliver additional performance benefits to the network for £221.4m. A funding avenue for this business case has not yet been identified. The total submission for Anglia is therefore £2,385.7m. We will also continue to build on our success of capturing third-party funding and will develop our capability further to attract even more.

This is a challenging but achievable plan that relies on all stakeholders coming together and working collaboratively to deliver the transformation that the region needs.

It is an exciting time for the Anglia route. We have a clear vision for the future, and a winning team of 2,500 dedicated employees. This plan sets out how we will deliver a safe, high performing railway with greater capacity and efficiency to power economic growth in Anglia and the wider UK.

Meliha Duymaz Route Managing Director, Anglia



Anglia route - Purpose and vision 1.1

Our purpose:

We believe that everything we do is to connect city, town and country to improve the lives of millions of people in Anglia.

Our vision:

When we accomplish our vision, we will imagine a world where we are delivering a safe, high performing railway with greater capacity and efficiency to power economic growth and make Anglia a place where people want to live, work and invest.

For CP6 this means that we will:

- Provide a safe, high performing, efficient and sustainable railway for Anglia
- Grow capacity in the Anglia region to enable an uplift in passenger and freight volumes
- Deliver for a diverse range of customers providing improved ۰ connections from East to West and through London, enabling millions to travel for work and leisure across the region, providing a gateway for international trade and air travel
- Be a great employer and build winning teams, rewarding • excellence and helping our people be the best they can be
- Be trusted by our stakeholders to attract and realise investment in the region: in the franchises, concessions and in third party funded projects

To accomplish our purpose and vision we will:

- Be accountable and deliver on our commitments
- Lead with confidence and pride in everything we do
- Be easy to do business with
- Raise the bar and continuously improve
- Support each other and build winning teams

Anglia at a glance 1.2



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



4,230 train services per day

1,697 miles of track

2,500 employees



235 stations



849 level crossings





Management of Liverpool Street - the UK's third busiest station



£915m renewals and refurbishment spend in CP5





£611m spent in the region with local companies each year

Gateway for international freight and essential link for commuters and leisure travellers. Anglia route serves:



Stansted and Southend Airports



Thameshaven, Tilbury, and Felixstowe Ports

Anglia works with and engages numerous stakeholders to achieve our vision and purpose:



13 Passenger and Freight **Operating Companies**



Over 50 Local Authorities and Local Enterprise Partnerships

1.3 Route objectives and cost proposal

The graph below shows the total funding that Anglia is requesting in CP6 (£2,385.7m) and the breakdown of this cost proposal in terms of the base plan and the further unfunded Digital Railway investment option.

Appendix D also lists further schemes which would improve safety and performance across the route. These equate to an additional £133m to deliver safety and performance benefits which would take the route performance forecasts closer to franchise and concession commitments.



 $\pounds 2,386m$: This enables a wider traffic management rollout in CP7 within Anglia and therefore gives opportunities for improved service recovery and reduced delays per incident despite additional trains operating on the network. This is unfunded and is therefore an additional option.

 $\pounds 2,164m$: This provides the forecast as shown in the route scorecard in section 3. There is an improvement in safety KPIs forecast, and in the number of infrastructure Service Affecting Failures. However there will be performance risks through the introduction of new trains and additional services in the timetable through CP6.

CP5 baseline

Graph showing the total funding that Anglia is requesting in comparison to the CP5 baseline

*Numbers have been rounded to the nearest whole number

The key objectives for the Anglia route are detailed in the table below, with an overview of the work that is required to meet each objective. The colour against each work item corresponds with the chart above to show how it will be funded.



CP6 Post Efficient Target (base plan)



CP6 + Digital Railway SOBC Option (£221m)

To provide a safe, high performing, efficient and sustainable railway for Anglia.

The renewals workbank addresses safety risks and is underpinned by a safety culture programme
The base plan workbank and operational/maintenance activities support the substantial growth (i.e. major rolling stock replacement and new timetables)
 CAPEX workbank: Track workbank focusses on reducing the risk of broken rails to improve the number of Track Service Affecting Failures by the end of CP6 OLE workbank focusses on refurbishing OLE equipment and removal and targeted component replacement campaigns Two interlocking signalling renewals at Cambridge and Clacton, and four condition led life extension schemes to other signalling interlockings Enables the renewal of equipment at 23 level crossings Replaces Liverpool Street station roof Stabilises the embankment at Stour Wood in Wrabness Manages the ongoing settlement on 55 miles of track on peat fens Additional performance and resilience works for Track, Electrification & Plant, and Signalling including additional renewals and the installation of Uninterruptable Power Supplies (UPS) at key locations. Data management centre to monitor asset and train data to implement a predict and prevent approach. Additional level crossing improvements and closures to address high risk, priority sites and improve safety.
 9 % of efficiencies across renewals and in the day to day maintenance and operations business. Driving efficiencies in the CAPEX workbank through activities such as integrated planning. Driving efficiencies in the OPEX workbank through activities such as using technology (e.g. Plain Line Pattern Recognition) and 'Lean' continuous improvement plans.
Wider implementation of an integrated Traffic Management solution across selective parts of the route

To grow capacity in the Anglia region to enable an uplift in passenger and freight volumes.

The proposed renewal and maintenance volumes deliver interventions required to manage the ageing asset to allow increased train services on the route

Alignment of the renewals and maintenance workbank addresses asset reliability and performance/response challenges

Earlier roll out of Traffic Management system to enable Connected Driver Advisory System (CDAS) to be utilised

To be a great employer and build winning teams, rewarding excellence and helping Anglia's people be the best they can be.

Continually develop our approach to diversity and inclusion throughout CP6

Develop a comprehensive training and development portfolio for all levels to build core management and leadership capability

Implement a new recruitment and attraction strategy to attract and retain high performing talent from across recruitment pools to meet future capability requirements

To deliver for a diverse range of customers providing increased connections from East to West and through London, enabling millions to travel for work and leisure across the region, providing a gateway for international trade and air travel.

Both the prioritised renewals plan and the access plan have been shared with and had input from our stakeholders (customers)

Operating to right-time and working closely with TOCs to manage train services will be a key focus area in CP6

Improving management of the supply chain to ensure effective delivery of multi-asset work packages

Wider implementation of an integrated Traffic Management system across selective parts of the route

To be trusted by stakeholders to attract and realise investment in the region, franchises, concessions and in third party funded projects.

Third party funding strategy designed to continue to attract investment to the route, building on the £100m that the route attracted in 2016/17

Raise additional funding for:

- Enhancement projects re-planned for CP6 (Bow Junction and Ely Area Capacity Enhancement projects)
- Strategically important enhancements (including DR schemes)
- Projects generating operating savings and third party benefits (i.e. Liverpool Street Area regeneration)
- Other third party funding which benefits the railway.

Utilise our delegated authority for local panels i.e. Anglia Governance Panel, Systems Review Panel, Assurance Review Panel and Anglia Investment Panel

Head of Business Development appointed to lead the further development and delivery of the strategy

1.4 Highlight projects

Anglia route will look radically different by the end of CP6, delivering additional benefit to customers, stakeholders, the wider economy and the route's own people. Some of the highlight projects this plan will support are detailed below. Appendix C details the timeframe for the key projects and programmes in CP6.



Railway Upgrade Plan projects through CP5 and into CP6 include Barking Riverside extension, Elizabeth Line, and Thameslink.

- Over 1,000 new carriages by 2020 on Greater Anglia Services
- 13% more trains calling at stations across East Anglia by the end of CP6
- Capacity for up to 27tph on Great Eastern Main Line and improved journey times between Norwich and London Liverpool Street



- High Output programme to deliver significant volume of works to improve track condition
- Opening of Elizabeth Line to link Anglia and Western routes and provide quicker travel through London
- New stations to increase connectivity across the region e.g.Soham, Beaulieu, Beam Park



Improving customer experience

- Station improvements to reduce congestion, increase volumes and improve safety
- Greater Anglia to reduce travel time to Norwich, Ipswich and Colchester
- TfL to deliver a new timetable with additional services, earlier start times and later finish times
- c2c Live App and Smartcards to improve customer journey experience



Enabling the digital railway

- Digital Railway to deliver Traffic Management solution across Thameside Route to increase capacity and reduce delay per incident
- Solution to be implemented into Upminster IECC in CP5 and then developed and transferred into Romford ROC
- Recommendation (currently unfunded) to deploy Traffic Management technologies on GE mainline and key branch lines, NLL. and WA route to Stansted



- Ely Area Capacity Enhancement Scheme to enable additional freight and passenger train paths through Ely area
- Felixstowe to Nuneaton programme to facilitate additional freight services from the port



- 'Think People' plan to assist Anglia in becoming the route of choice and ensure our employees are motivated, supported, rewarded and valued
- Recruitment attraction strategy to enable greater workforce diversity and other key priorities
- Culture change programme to support a committed and diverse workforce to deliver a better railway for Anglia

2. Stakeholder priorities

2.1 Overview of stakeholder engagement in Anglia

Active engagement of our stakeholders has been a critical part of this planning process, both to inform priorities and also to increase and sustain transparency around the planning process. The Anglia route has a broad range of stakeholders (as illustrated in the table in section 2.3) who recognise that there has been a step-change in the way we have engaged with them in this process. Since March 2017 we have held 30 sessions involving 136 people across 30 of our stakeholder organisations including local authorities, passenger train operators and freight operators. Sessions were designed in order to consult on our industry plans for CP6, understand the different needs and priorities of our stakeholders and discuss different delivery options. Anglia has also worked closely with the Freight and National Passenger Operator (FNPO) route engagement team.

These have taken the form of briefings on how the strategic planning process is structured, explanation of the content of the Anglia route submission to date and discussion of the operators' priorities for the coming control period. These included the asset, customer, and strategic planning teams for Anglia route, as well as representation from other routes which operators have an interest in such as Western route for TfL Rail and Southeast route for London Overground.

Further meetings and 'deep-dive' workshops have taken place, with more planned – with a particular focus on agreeing an access strategy within CP6 to validate the deliverability of the plan, and to identify areas of particular performance concern with the operators which may align with planned renewals locations to enable business cases to be developed.

We will continue to engage with our stakeholder groups on a regular basis and will review the access strategies with these groups in line with the final determination. A further presentation session was held in November 2017 to update stakeholders on the progress of the plan and next steps – over 75 different organisations and authorities were invited.

2.2 Summary of key themes from stakeholder sessions

Stakeholder engagement is critical as our stakeholders have a range of different expectations and demands of the Anglia route. However, five consistent themes came through from the sessions:

Safety: The number one priority is safety as it impacts all other success factors for the railway.

Reliability: Performance is the most visible factor to passengers and there is a requirement for on-time punctuality.

Access Planning and Renewals Work: Early engagement and communication is key and consideration must be given to the impact on the wider network, planning diversionary routes.

Customers: The workbank should be aligned to maximise efficient use of disruptive access and minimise overall access requirements. The impact on end users should be considered and defined, benefits and changes effectively communicated.

Investment: Ensuring there will be enough funding for the scale of works required to meet the extra demands for the region and realise TOC and other investment.



Photographs taken from the stakeholder workshops held in March 2017

2.3 Overview of Anglia route stakeholders and targeted engagement activities

Stakeholder Group	Why are they a stakeholder group?	How are we engaging this stakeholder group and what have they told us?
Train Operating Companies Transport for London Greateranglia C2C mtrcrossrail EAST MIDLANDS TRAINS	Train operating companies (TOCs) are the consumer face of the rail industry and we work closely together to run the railway within Anglia. We have engaged with TOCs to ensure our strategic plan for CP6 is directly aligned to the needs of customers. Lead passenger operators are Greater Anglia, Arriva Rail London, c2c and TfL Rail.	Introductory workshops held across stakeholder groups in Ipswich, Cambridge and Stratford in March 2017. From May 2017 onwards TOC stakeholders attended tailored 'deep dive' sessions to discuss specific complexities and performance benefits of the CP6 plans and the Anglia access strategy. Going forward we will continue to hold regular face-to-face meetings. "We like the workbank and will take the disruption but we need Anglia to be funded to help us deliver our franchise commitments"
Freight Operating Companies DB SCHENKER GB Railfreight Freightliner	Freight Operating Companies (FOCs) use the rail network to transport goods across the country as a more cost effective and environmentally friendly means of transport. Lead freight operators include Freightliner Intermodal, Freightliner HeavyHaul, DB Cargo, DRS, GBRf, and Colas Rail.	Introductory workshops held across stakeholder groups in Ipswich, Cambridge and Stratford in March 2017. From May 2017 onwards FOC stakeholders attended tailored 'deep dive' sessions to discuss specific complexities and performance benefits of the CP6 plans and the Anglia access strategy. Going forwards we will continue to work closely with our freight customers to deliver a robust, integrated plan. "We need investment in the Anglia Route to enable us to remain competitive with road"
Local Authorities* Havering Colchester Newham London Estimate Counce County Council	The railway touches almost every community in Britain. Our work not only impacts the millions who travel by rail, but also our lineside neighbours and the environment where our infrastructure is located. We work with local authorities to understand the impact of our work and better communicate with our customers and those affected by our work.	Held introductory stakeholder workshops in Ipswich, Cambridge and Stratford in March 2017. From May 2017 onwards we established four local authority stakeholder case-studies, working closely with areas particularly affected by the CP6 plans or with sensitivities due to the potential economic impact of works on them e.g. ports or airports. This activity will ensure key advocacy is given by specific stakeholders. It will also enable us to pinpoint value add opportunities and deliver third party works, such as footbridges, alongside proposed works. <i>"Rail is a vital part of our local economy and supports our communities and jobs"</i>
Other Stakeholder Groups Rail Delivery Group Image: Stransport focus Image: Stransport focus <tr< th=""><th>We work with numerous other stakeholder groups from regulating bodies such as the Department for Transport (DfT), Office of Rail and Road (ORR) and Rail Delivery Group (RDG), to watchdogs such as Transport Focus and London TravelWatch, as well as other stakeholders such as Ports and Highways England.</th><th>Engaged affected stakeholder groups at introductory workshops in Ipswich, Cambridge and Stratford in March 2017. From May 2017 onwards we established 'light-touch' sessions with other relevant stakeholders who will be impacted indirectly by CP6 works. These include London Underground and other TOCs operating on Anglia such as Cross Country.</th></tr<>	We work with numerous other stakeholder groups from regulating bodies such as the Department for Transport (DfT), Office of Rail and Road (ORR) and Rail Delivery Group (RDG), to watchdogs such as Transport Focus and London TravelWatch, as well as other stakeholders such as Ports and Highways England.	Engaged affected stakeholder groups at introductory workshops in Ipswich, Cambridge and Stratford in March 2017. From May 2017 onwards we established 'light-touch' sessions with other relevant stakeholders who will be impacted indirectly by CP6 works. These include London Underground and other TOCs operating on Anglia such as Cross Country.

2.4 Prioritisation of stakeholder needs and how these have been addressed

Our stakeholders have a range of different expectations and demands of the Anglia route. Consideration has been given to the operators' needs and aspirations and local authorities' local plans, and how these might be met with the CP6 programme of work. An assessment of stakeholders' impact and influence on the programme has been undertaken and work is ongoing to ensure the deliverability of the plan by collaborating with all our lead passenger and freight operators in creating the CP6 access plan. There is acknowledgement from all parties that enhancement requirements will require new funding streams from wider industry stakeholders. The table below summarises some of the views from our stakeholders for CP6 and how this plan addresses them. Engagement with the operators is taking place in the context of a suite of new and recent franchises and concessions with demanding committed obligations to DfT and TfL as well as projected population growth around the network. Buy-in from these operators and other stakeholders, such as councils, is key to future delivery of railway works and is essential in our devolved business.

Key stakeholder(s)	Prioritised Needs	How this has been addressed	Measurement
TOCs and FOCs	Safety – a safe railway impacts on all success factors for the railway, including performance	Renewals work addresses some safety issues and are further underpinned by a safety culture programme	Safety measure detailed on the scorecard
TOCs	Renewals should be based on asset condition rather than regular cycles	Asset plan is based on asset condition and policy	Sustainability metric on the scorecard (in development)
TOCs	Use business cases to align renewals with enhancements	Additional Strategic Outline Business Case (SOBC) has been produced and detailed in Appendix D $-$ funding is not confirmed	Measure would impact on scorecard metrics, such as performance
TOCs, Transport Focus and other stakeholders	Access plans should be demand-driven based on customer footfall	Further workshops have been undertaken to collaborate on agreeing CP6 access plan – this will be ongoing	Local measure to be developed
TOCs	Delivery of performance levels for franchises and concessions	Meeting this will be challenging as the current funded performance trajectory does not meet the aspirations of the franchise and concession agreements	Performance measure detailed on the scorecard
FOCs	Increase capacity for longer freight trains	Only maintenance, operations and renewals are addressed by this plan	Local measure to be developed
FOCs	Identify how Network Rail can drive efficiencies to contribute to driving down freight costs	Efficiencies are included within the plan. However, impact of these on FOCs will be minimal	Finance measure detailed on the scorecard
FOCs	Blockades are a challenge	Further workshops have been undertaken to collaborate on agreeing CP6 access plan – this will be ongoing	Local measure to be developed
Transport Focus	Requirement for true, on-time punctuality	On-time metrics will be measured through CP6	Performance measure detailed on the scorecard
TOCs, Transport Focus and other stakeholders	Inform customers in advance of works on the railway, and be able to articulate clear benefits of works	Anglia stakeholder plan addresses how this will be undertaken	Local measure to be developed

3. Route objectives

This plan is predicated on the key assumptions laid out in Appendix B and will be affected as these assumptions change. The long term scorecard in section 3.2 forecasts the regulated output for the route in 18/19 and beyond into CP6 based on the core plan within this submission.

3.1 Scorecard for 17/18

The table below summarises some of the key measures on the Anglia scorecard for 2017/18 for comparative purposes.

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Greater Anglia Right Time Arrival 64.8% 68.4% 69.8% London Overground PPM 94.9% 95.3% 95.8% London Overground CaSL 2.1% 1.8% 1.6% London Overground Right Time Arrival 76.4% 80.0% 84.0% TfL Rail PPM 93.5% 94.5% 94.8% TfL Rail CaSL 2.9% 2.2% 2.1% TfL Rail Right Time Arrival 82.0% 84.0% 88.0% Freight Delivery Metric (FDM) 91.2% 92.6% 94.0% Locally Driven Customer Measures WORSE THAN TARGET TARGET BETTER THAN TARGET Delay Per Incident (DPI) 10% 20% 30% Railway Complaints 885 880 770	Greater Anglia CaSL	2.7%	2.5%	2.2%					
London Overground PPM 94.9% 95.3% 95.8% London Overground CaSL 2.1% 1.8% 1.6% London Overground Right Time Arrival 76.4% 80.0% 84.0% TfL Rail PPM 93.5% 94.5% 94.8% TfL Rail CaSL 2.9% 2.2% 2.1% TfL Rail Right Time Arrival 82.0% 84.0% 88.0% Freight Delivery Metric (FDM) 91.2% 92.6% 94.0% Locally Driven Customer Measures WORSE THAN TARGET TARGET BETTER THAN TARGET Delay Per Incident (DPI) 10% 20% 30% Railway Complaints 885 880 770	Greater Anglia Right Time Arrival	64.8%	68.4%	69.8%					
London Overground CaSL 2.1% 1.8% 1.6% London Overground Right Time Arrival 76.4% 80.0% 84.0% TfL Rail PPM 93.5% 94.5% 94.8% TfL Rail CaSL 2.9% 2.2% 2.1% TfL Rail Right Time Arrival 82.0% 84.0% 88.0% Freight Delivery Metric (FDM) 91.2% 92.6% 94.0% Locally Driven Customer Measures WORSE THAN TARGET TARGET BETTER THAN TARGET Delay Per Incident (DPI) 10% 20% 30% Railway Complaints 885 880 770	London Overground PPM	94.9%	95.3%	95.8%					
London Overground Right Time Arrival 76.4% 80.0% 84.0% TfL Rail PPM 93.5% 94.5% 94.8% TfL Rail CaSL 2.9% 2.2% 2.1% TfL Rail Right Time Arrival 82.0% 84.0% 88.0% Freight Delivery Metric (FDM) 91.2% 92.6% 94.0% Locally Driven Customer Measures WORSE THAN TARGET TARGET BETTER THAN TARGET Delay Per Incident (DPI) 10% 20% 30% Railway Complaints 885 880 770	London Overground CaSL	2.1%	1.8%	1.6%					
TfL Rail PPM 93.5% 94.5% 94.8% TfL Rail CaSL 2.9% 2.2% 2.1% TfL Rail Right Time Arrival 82.0% 84.0% 88.0% Freight Delivery Metric (FDM) 91.2% 92.6% 94.0% Locally Driven Customer Measures 17/18 17/18 Delay Per Incident (DPI) 10% 20% 30% Railway Complaints 885 880 770	London Overground Right Time Arrival	76.4%	80.0%	84.0%					
TfL Rail CaSL2.9%2.2%2.1%TfL Rail Right Time Arrival82.0%84.0%88.0%Freight Delivery Metric (FDM)91.2%92.6%94.0%Locally Driven Customer MeasuresWORSE THAN TARGETTARGETBETTER THAN TARGETDelay Per Incident (DPI)10%20%30%Railway Complaints885880770	TfL Rail PPM	93.5%	94.5%	94.8%					
TfL Rail Right Time Arrival82.0%84.0%88.0%Freight Delivery Metric (FDM)91.2%92.6%94.0%Locally Driven Customer MeasuresWORSE THAN TARGET17/18WORSE THAN TARGETTARGETBETTER THAN TARGETDelay Per Incident (DPI)10%20%30%Railway Complaints885880770	TfL Rail CaSL	2.9%	2.2%	2.1%					
Freight Delivery Metric (FDM)91.2%92.6%94.0%Locally Driven Customer MeasuresWORSE THAN TARGET17/18WORSE THAN TARGETBETTER THAN TARGETDelay Per Incident (DPI)10%20%30%Railway Complaints885880770	TfL Rail Right Time Arrival	82.0%	84.0%	88.0%					
Instrument Locally Driven Customer Measures 17/18 WORSE THAN TARGET TARGET BETTER THAN TARGET Delay Per Incident (DPI) 10% 20% 30% Railway Complaints 885 880 770	Freight Delivery Metric (FDM)	91.2%	92.6%	94.0%					
Delay Per Incident (DPI)WORSE THAN TARGETTARGETBETTER THAN TARGETDelay Per Incident (DPI)10%20%30%Railway Complaints885880770	Leselly Driven Customer Messures		17/18						
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Railway Complaints 885 880 770	Delay Per Incident (DPI)	10%	20%	30%					
	Railway Complaints	885	880	770					

3.2 Long term scorecard

Safety	Targets	18/19	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
	Worse than Target	0.680	0.582	0.483	0.384	0.286	0.187	0.187	
Lost Time Injury Frequency Rate (LTIFR)	Target	0.618	0.529	0.439	0.349	0.260	0.170	0.170	
	Better than Target	0.556	0.476	0.395	0.314	0.234	0.153	0.153	
	Worse than Target	60%	60%	60%	60%	60%	60%	60%	
Train accident risk reduction measures	Target	80%	80%	80%	80%	80%	80%	80%	
	Better than Target	100%	100%	100%	100%	100%	100%	100%	
	Worse than Target	6	6	6	6	6	6	6	
Top 10 Milestones to reduce level crossing risk	Target	8	8	8	8	8	8	8	
	Better than Target	10	10	10	10	10	10	10	
	Worse than Target	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
RM3 (Assessment of the current safety performance levels)	Target	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Better than Target	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Train Performance	Targets	18/19	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
	Worse than Target	1.45	1.47	1.48	1.48	1.48	1.48	1.48	
Consistent Route Measure - Performance	Target	1.44	1.46	1.47	1.46	1.46	1.46	1.46	
	Better than Target	1.43	1.43	1.43	1.43	1.42	1.36	1.36	
	Worse than Target	01 7%							
Freight Delivery Metric (FDM-R)	v	91.270	91.2%	91.2%	91.2%	91.2%	91.2%	91.2%	
	Target	92.9%	91.2% 92.9%	91.2% 92.9%	91.2% 92.9%	91.2% 92.9%	91.2% 92.9%	91.2% 92.9%	
	Target Better than Target	92.9% 93.9%	91.2% 92.9% 93.9%	91.2% 92.9% 93.9%	91.2% 92.9% 93.9%	91.2% 92.9% 93.9%	91.2% 92.9% 93.9%	91.2% 92.9% 93.9%	
	Target Better than Target Worse than Target	92.9% 93.9% 95.5%	91.2% 92.9% 93.9% 95.4%	91.2% 92.9% 93.9% 95.4%	91.2% 92.9% 93.9% 95.6%	91.2% 92.9% 93.9% 95.5%	91.2% 92.9% 93.9% 95.5%	91.2% 92.9% 93.9% 95.5%	
C2C PPM	Target Better than Target Worse than Target Target	92.9% 93.9% 95.5% 95.6%	91.2% 92.9% 93.9% 95.4% 95.5%	91.2% 92.9% 93.9% 95.4% 95.5%	91.2% 92.9% 93.9% 95.6% 95.7%	91.2% 92.9% 93.9% 95.5% 95.6%	91.2% 92.9% 93.9% 95.5% 95.6%	91.2% 92.9% 93.9% 95.5% 95.6%	•
С2С РРМ	Target Better than Target Worse than Target Target Better than Target	92.9% 93.9% 95.5% 95.6% 95.7%	91.2% 92.9% 93.9% 95.4% 95.5% 95.6%	91.2% 92.9% 93.9% 95.4% 95.5% 95.6%	91.2% 92.9% 93.9% 95.6% 95.7% 95.8%	91.2% 92.9% 93.9% 95.5% 95.6% 95.7%	91.2% 92.9% 93.9% 95.5% 95.6% 95.9%	91.2% 92.9% 93.9% 95.5% 95.6% 95.9%	
С2С РРМ	Target Better than Target Worse than Target Target Better than Target Worse than Target	91.2% 92.9% 93.9% 95.5% 95.6% 95.7% 1.3%	91.2% 92.9% 93.9% 95.4% 95.5% 95.6% 1.4%	91.2% 92.9% 93.9% 95.4% 95.5% 95.6% 1.4%	91.2% 92.9% 93.9% 95.6% 95.7% 95.8% 1.3%	91.2% 92.9% 93.9% 95.5% 95.6% 95.7% 1.3%	91.2% 92.9% 93.9% 95.5% 95.6% 95.9% 1.4%	91.2% 92.9% 93.9% 95.5% 95.6% 95.9% 1.4%	
C2C PPM C2C Cancellations	Target Better than Target Worse than Target Target Better than Target Worse than Target Target	92.9% 93.9% 95.5% 95.6% 95.7% 1.3% 1.2%	91.2% 92.9% 93.9% 95.4% 95.5% 95.6% 1.4% 1.3%	91.2% 92.9% 93.9% 95.4% 95.5% 95.6% 1.4% 1.3%	91.2% 92.9% 93.9% 95.6% 95.7% 95.8% 1.3% 1.2%	91.2% 92.9% 93.9% 95.5% 95.6% 95.7% 1.3% 1.2%	91.2% 92.9% 93.9% 95.5% 95.6% 95.9% 1.4% 1.3%	91.2% 92.9% 93.9% 95.5% 95.6% 95.9% 1.4% 1.3%	

	Worse than Target	83.2%	83.0%	82.9%	83.2%	83.2%	83.1%	83.1%	
C2C OnTime	Target	83.3%	83.1%	83.0%	83.3%	83.3%	83.3%	83.3%	
	Better than Target	83.5%	83.3%	83.2%	83.5%	83.5%	83.6%	83.6%	
	Worse than Target	89.1%	88.4%	88.7%	88.6%	88.6%	88.6%	88.6%	
Greater Anglia PPM	Target	89.6%	89.0%	89.2%	89.2%	89.2%	89.2%	89.2%	
	Better than Target	89.9%	89.2%	89.5%	89.4%	89.4%	89.8%	89.8%	
	Worse than Target	2.1%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	
Greater Anglia Cancellations	Target	2.0%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	
	Better than Target	1.9%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
	Worse than Target	65.2%	64.1%	64.5%	64.5%	64.5%	64.4%	64.4%	
Greater Anglia OnTime	Target	66.1%	65.0%	65.3%	65.3%	65.3%	65.3%	65.3%	
	Better than Target	66.5%	65.4%	65.7%	65.7%	65.7%	66.3%	66.3%	
	Worse than Target	95.0%	94.5%	94.5%	94.5%	94.5%	94.5%	94.5%	
London Overground PPM	Target	95.2%	94.7%	94.7%	94.7%	94.7%	94.7%	94.7%	
	Better than Target	95.4%	94.9%	94.9%	94.9%	94.9%	95.0%	95.0%	
	Worse than Target	1.6%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	
London Overground Cancellations	Target	1.5%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	
	Better than Target	1.4%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	
	Worse than Target	67.5%	66.7%	66.7%	66.7%	66.7%	66.7%	66.7%	
London Overground OnTime	Target	67.8%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	
	Better than Target	68.2%	67.4%	67.4%	67.4%	67.4%	67.5%	67.5%	
	Worse than Target	94.3%	93.8%	93.8%	93.8%	93.8%	93.8%	93.8%	
Tfl Rail PPM	Target	94.4%	93.9%	93.9%	93.9%	93.9%	93.9%	93.9%	
	Better than Target	94.5%	94.0%	94.0%	94.0%	94.0%	94.2%	94.2%	
	Worse than Target	1.8%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
TfL Rail Cancellations	Target	1.7%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	
	Better than Target	1.6%	1.8%	1.8%	1.8%	1.9%	1.8%	1.8%	

	Worse than Target	73.3%	72.8%	72.8%	72.8%	72.8%	72.8%	72.8%	
TfL Rail OnTime	Target	73.4%	72.9%	72.9%	72.9%	72.9%	72.9%	72.9%	
	Better than Target	73.6%	73.0%	73.0%	73.0%	73.0%	73.2%	73.2%	
Customer	Targets	18/19	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
	Worse than Target	85%	85%	86%	86%	86%	86%	86%	
Use of the Network (All Anglia Route National Rail Passenger Survey - NRPS)	Target	87%	87%	88%	88%	88%	88%	88%	
	Better than Target	89%	89%	90%	90%	90%	90%	90%	
	Worse than Target	751	732	714	696	679	662	662	
Number of Railway Works Complaints	Target	731	694	659	626	595	565	565	
	Better than Target	693	624	562	506	455	410	410	
	Worse than Target	0%	0%	0%	0%	0%	0%	0%	
MTR Crossrail Customer Scorecard	Target	50%	50%	50%	50%	50%	50%	50%	
	Better than Target	100%	100%	100%	100%	100%	100%	100%	
	Worse than Target	0%	0%	0%	0%	0%	0%	0%	
C2C Customer Scorecard	Target	50%	50%	50%	50%	50%	50%	50%	
	Better than Target	100%	100%	100%	100%	100%	100%	100%	
	Worse than Target	0%	0%	0%	0%	0%	0%	0%	
Greater Anglia Customer Scorecard	Target	50%	50%	50%	50%	50%	50%	50%	
	Better than Target	100%	100%	100%	100%	100%	100%	100%	
	Worse than Target	0%	0%	0%	0%	0%	0%	0%	
Arriva Rail London Customer Scorecard	Target	50%	50%	50%	50%	50%	50%	50%	
	Better than Target	100%	100%	100%	100%	100%	100%	100%	
Sustainability / Asset Management	Targets	18/19	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
	Worse than Target	-0.1%	0.0%	0.3%	0.3%	0.1%	0.0%	0.0%	
Reduction In Service Affecting Failures (SAF)	Target	0.0%	0.5%	0.8%	0.8%	0.6%	0.4%	0.0%	
	Better than Target	0.1%	1.0%	1.3%	1.3%	1.1%	0.9%	0.5%	

	Worse than Target	13.1%	-1.1%	-1.1%	-1.1%	-1.0%	-0.9%	-0.5%	
CRI	Target	14.1%	-0.1%	0.3%	1.1%	2.2%	3.3%	0.0%	
	Better than Target	15.1%	0.9%	2.3%	4.1%	6.3%	8.4%	0.5%	
	Worse than Target	90%	90%	90%	90%	90%	90%	90%	
7 Key Volumes	Target	95%	95%	95%	95%	95%	95%	95%	
	Better than Target	100%	100%	100%	100%	100%	100%	100%	
	Worse than Target	60%	60%	60%	60%	60%	60%	60%	
Top Investment Milestones	Target	80%	80%	80%	80%	80%	80%	80%	
	Better than Target	100%	100%	100%	100%	100%	100%	100%	
	Worse than Target	TBC	твс	твс	твс	твс	твс	твс	
Network Sustainability	Target	TBC	твс	твс	твс	твс	-4%	твс	
	Better than Target	TBC	твс	твс	твс	твс	твс	твс	
					0.4.10.0	22/22	22/24		A shi su shitte
Financial Performance	Targets	18/19	19/20	20/21	21/22	22/23	23/24	24/25	Achievability
Financial Performance	Targets Worse than Target	18/19 -£13.6m	19/20 -£17.6m	20/21 -£23.3m	-£21/22	-£24.4m	-£17.4m	24/25 -£20.8m	Achievability
Financial Performance Financial Performance Measure (FPM) - Gross Excl. Enhancements (£m)	Targets Worse than Target Target	18/19 -£13.6m £0m	19/20 -£17.6m £0m	20/21 -£23.3m £0m	<u>-£21,722</u> -£21.7m £0m	-£24.4m £0m	<u>-£17.4m</u> £0m	24/25 -£20.8m £0m	Achievability
Financial Performance Financial Performance Measure (FPM) - Gross Excl. Enhancements (£m)	Targets Worse than Target Target Better than Target	18/19 -£13.6m £0m £13.6m	19/20 -£17.6m £0m £17.6m	20/21 -£23.3m £0m £23.3m	<u>-£21.7m</u> <u>£0m</u> <u>£21.7m</u>	<u>-£24.4m</u> <u>£0m</u> <u>£24.4m</u>	<u>-£17.4m</u> <u>£0m</u> £17.4m	24/25 -£20.8m £0m £20.8m	Achievability
Financial Performance Financial Performance Measure (FPM) - Gross Excl. Enhancements (£m)	Targets Worse than Target Target Better than Target Worse than Target	18/19 -£13.6m £0m £13.6m -£9.9m	19/20 -£17.6m £0m £17.6m TBC	20/21 -f23.3m £0m £23.3m TBC	<u>-f21.7m</u> <u>f0m</u> <u>f21.7m</u> TBC	<u>-£24.4m</u> <u>£0m</u> <u>£24.4m</u> TBC	<u>-£17.4m</u> <u>£0m</u> <u>£17.4m</u> TBC	24/25 -£20.8m £0m £20.8m TBC	Achievability
Financial Performance Financial Performance Measure (FPM) - Gross Excl. Enhancements (£m) Financial Performance Measure (FPM) - Gross Enhancements only (£m)	Targets Worse than Target Target Better than Target Worse than Target Target	18/19 -£13.6m £0m £13.6m -£9.9m £0m	19/20 -£17.6m £0m £17.6m TBC £0m	20/21 -£23.3m £0m £23.3m TBC £0m	21/22 -£21.7m £0m £21.7m TBC £0m	<u>-£24.4m</u> <u>£0m</u> <u>£24.4m</u> <u>TBC</u> <u>£0m</u>	<u>-£17.4m</u> <u>£0m</u> <u>£17.4m</u> <u>TBC</u> <u>£0m</u>	24/25 -£20.8m £0m £20.8m TBC £0m	Achievability
Financial Performance Financial Performance Measure (FPM) - Gross Excl. Enhancements (£m) Financial Performance Measure (FPM) - Gross Enhancements only (£m)	Targets Worse than Target Target Better than Target Worse than Target Target Better than Target	18/19 -£13.6m £0m £13.6m -£9.9m £0m £0m £0m	19/20 -f17.6m f0m f17.6m TBC f0m TBC	20/21 -£23.3m £0m £23.3m TBC £0m TBC	21/22 -£21.7m £0m £21.7m TBC £0m TBC	<u>-£24.4m</u> <u>£0m</u> <u>£24.4m</u> <u>TBC</u> <u>£0m</u> <u>TBC</u>	23/24 -£17.4m £0m £17.4m TBC £0m TBC	24/25 -£20.8m £0m £20.8m TBC £0m TBC	Achievability
Financial Performance Financial Performance Measure (FPM) - Gross Excl. Enhancements (£m) Financial Performance Measure (FPM) - Gross Enhancements only (£m)	TargetsWorse than TargetTargetBetter than TargetWorse than TargetTargetBetter than TargetWorse than TargetWorse than Target	18/19 -£13.6m £0m £13.6m -£9.9m £0m £9.9m £3.4m	19/20 -£17.6m £0m TBC £0m TBC £3.8m	20/21 -£23.3m £0m £23.3m TBC £0m TBC £4.7m	21/22 -£21.7m £0m £21.7m TBC £0m TBC £4.4m	22/23 -£24.4m £0m £24.4m TBC £0m TBC £4.9m	23/24 -£17.4m £0m £17.4m TBC £0m TBC £3.7m	24/25 -£20.8m £0m TBC £0m TBC £4.2m	
Financial Performance Financial Performance Measure (FPM) - Gross Excl. Enhancements (£m) Financial Performance Measure (FPM) - Gross Enhancements only (£m) Cash Compliance – Income & Expenditure	TargetsWorse than TargetTargetBetter than TargetWorse than TargetTargetBetter than TargetWorse than TargetTargetTargetTarget	18/19 -£13.6m £0m £13.6m -£9.9m £0m £0m	19/20 -f17.6m f0m f17.6m TBC f0m TBC f3.8m f0m	20/21 -£23.3m £0m £23.3m TBC £0m TBC £4.7m £0m	21/22 -£21.7m £0m £21.7m TBC £0m TBC £4.4m £0m	22/23 -£24.4m £0m £24.4m TBC £0m TBC £4.9m £0m	23/24 -£17.4m £0m £17.4m TBC £0m TBC £3.7m £0m	24/25 -£20.8m £0m £20.8m TBC £0m TBC £4.2m £0m	

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

Regulatory floors

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

Regulatory floors	19/20	20/21	21/22	22/23	23/24
Network performance - passenger	1.92	1.92	1.92	1.92	1.91
Freight Delivery Metric (FDM-R)	90.8%	90.8%	90.8%	90.8%	90.8%
Network Sustainability*	90%	90%	90%	90%	90%

* This is a measure of cumulative delivery and is a different metric to that shown in the long-term scorecard table

Please see appendix H for a description of how these metrics have been derived.

3.3 Route Scorecard Summary

3.3.1 Safety

The route continues to drive safety improvements with a particular focus on safety culture and reducing the likelihood of incidents to enable improvements in workforce, passenger and public safety. Managing safety risks in CP6 will be a challenge with an ever busier railway. The funding described within this document, alongside the improved safety culture, is forecast to deliver an improvement in safety each year which is a significant reduction to our current position and best CP5 result. The route has set a target to start CP7 with a stable foundation in safety culture and improved controls enabling a significant improvement on what is currently delivered. This has been defined as 'amber' because it requires safety culture changes in order to deliver.

3.3.2 Performance

Anglia continues to focus on the current control period outputs during CP5. However, the route operators have their own diverse set of measures that they are governed by which will be brought together by the OnTime metric in CP6. Therefore, Anglia will ensure that the route is fully ready for the new metrics in CP6 of which OnTime will be the primary measure. PPM forecasts are shown here for comparative purposes only.

The OnTime figures in the scorecard were derived from a PPM model using a metrics conversion tool. The inputs to the PPM model include historical incident data and assumptions related to traffic and passenger growth, service affecting failures, timetable changes and new rolling stock.

The costed renewals plan outlined in this document is expected to give a minor reduction in the number of infrastructure service affecting failures. However, an increase in the number of passengers forecast to travel, coupled with the risks around introducing new trains, and running more services through timetable changes, means that there will not be a significant rise in performance over CP6 from the forecast CP5 output and performance will remain relatively stable. This will not meet the operators' expectations, although customers will benefit from faster, more frequent services.

The new Crossrail and Greater Anglia timetables will not be in place until December 2019. This means that insufficient information will be available to accurately forecast the impact of this on Anglia route's performance trajectory. This uncertainty is reflected in the SBP trajectory. Due to this inherent uncertainty in forecasting performance for the effects of the new timetables and rolling stock, we consider that it will be appropriate to reopen the performance forecast for TfL Rail, Greater Anglia and other affected Train Operators for CP6. A change in the performance forecast will necessitate a recalibration of Network Rail's Schedule 8 Benchmarks, which are directly linked to the CP6 performance forecasts. We suggest that this recalibration be taken forward in July 2021. This will allow for the new timetables to be in place, for a six month bedding-in period, and for a full year's operation to be completed, so that sufficient performance data will be available.

Anglia has defined performance as 'amber' as it relies on both Network Rail and the TOCs to deliver in order to achieve forecast.

3.3.3 Locally driven measures

All Anglia NRPS % measures the overall Anglia National Railway Passenger Satisfaction results. This has been defined as an 'amber' rating as it relies on delivery by both TOCs and Network Rail to achieve the forecasted score. Greater Anglia has the greatest weighting to this score as they run the largest number of services. Anglia has therefore forecast an improvement in 2020/21 due to the introduction of the new fleet and the maturity of the customer experience training Greater Anglia are currently giving their staff.

For the Railway Works Complaints Forecast, despite an expected increase in contact (of approximately 15% per year), the aim is to improve the prenotification processes and tackle unsocial worker behaviour, thus reducing the number of complaints in these areas. These cultural change improvements will drive this modest reduction despite the forecast increase in customer contact. This has been rated as 'amber' due to the cultural change required to drive these improvements.

3.3.4 Sustainability and Asset Management capability

The influence on asset reliability by asset is detailed in section 5.2. However, in summary, the proposed renewals workbank has been prioritised according to asset policy compliance, safety and performance. Due to ageing assets, asset obsolescence and deferred renewals from previous control periods, the work to be completed in CP6 is more than in CP5. This enables a minor improvement in infrastructure asset reliability and therefore the number of service affecting failures is forecast to reduce across CP6. Maintenance activity will remain a critical factor in sustaining these levels of asset reliability.

The CRI number changes between the last year of CP5 and the first year of CP6 as CRI is re-baselined to compare against the final year of CP5 in CP6. In CP5, CRI compares against the final year of CP4.

3.3.5 Customer Engagement in the Scorecard development

The Anglia route lead operators have had visibility of the scorecard within this route plan. There is commitment from each operator to continue to develop a localised Network Rail / TOC scorecard which will roll up into this top level scorecard each year in CP6.

The performance forecasts have been shared with the lead operators, and an explanation of how they have been derived has been discussed.

4. Activity prioritisation on a page

4.1 Safety and environment

Sum	mary of objectives	To improve safety in	all areas of the route, covering workforce, health and wellbeing, passenger and public, and our	sustainability in	npact.
No.	Key constraints, risks a	and opportunities	What we plan to do	Anglia route owner*	Timescale (start- finish)
1	C: Within the level of fundir of work may limit the pace LTIFR and train accident r safety.	g available, the volume e of change to reduce isk and improve public	Workforce safety: Develop foundations for a safety centric culture with targeted workstreams on leadership, organisational learning, management/supervision competency and capability, creating safer teams and safety for frontline staff.	HORSHE	CP5 - CP6
2	O: There is an opportunity to reduce near misses and therefore improve track worker safety.		Workforce safety: Focus on improved activity planning and task control, applying the hierarchy of control and deploying new technology e.g. track worker warning systems.	HORSHE & DRSAM	CP5 - CP6
3	O: There is an opportunity to reduce work accidents, LTIFR and Fatality Weighted Index (FWI).		Workforce safety: Focus on addressing slips, trips & falls, manual handling, driving (through further deployment of awareness techniques), supervisor accountability, improved assessments, application of the hierarchy of control and further use of technology.		CP5 - CP6
4	O: There is an opportunity wellbeing (including manage activity.	v to improve workforce ement) through targeted	Workforce safety: Reduce fatigue risk via rostering and 14hrs door to door, improve mental wellbeing via improved leadership understanding and management tools, improve HAVs and respiratory risk compliance and surveillance.	HORSHE	CP5 - CP6
5	O: There is an opportunity engagement with the safety	to improve workforce agenda.	Workforce safety: Drive and deliver 'everyone home safe every day' vision along with contact risks, life-saving rules, PPE, Sentinel and Home Safe plan and the related hopper.	HORSHE	CP5 - CP6
6	R: There is a risk that asset condition is continuing to deteriorate which poses a risk to passengers due to increased failures.		Passenger safety: Improve asset condition via the Route Asset Management Plans (RAMPs) with a specific focus on wrongside asset failures that contribute to train accident risk. Preserve assets in a safe condition through focussed and high quality maintenance.	HORSHE	CP5 - CP6
7	O: There is an opportunity trisk and FWI to improve pub	o reduce level crossing lic safety.	Public safety: Targeted programme to upgrade level crossings based on risk supplemented with a community engagement plan targeting hotspot locations, local area issues and wider engagement.	HORSHE	CP5 - CP6
8	R : There is a continued trespass and suicides.	and increasing risk of	Public safety: Target hardening of key risk areas and focussed activity to address known and developing hot spot locations through a comprehensive trespass and suicide plan.	HORSHE	CP5 - CP6
9	O: There is an opportunit savings through minimising	ty to achieve financial energy usage.	Environment and sustainable development: Maximise environmental benefits within the budget allocation and funding arrangements within the control periods to reduce our environmental impacts.	HORSHE	CP5 – CP6

* For job titles please see Appendix G - Glossary



Summary of risk outcome (N=current level of risk, T=forecasted level of risk at end of CP6)

There are a large volume of initiatives making up each planned workstream. An increasingly diverse workforce brings different risks and opportunities. Changes in infrastructure and changing trends also present a risk. Emerging risks related to new ways of working will need to be identified and managed. Workforce engagement, training and competency development will be needed to manage these risks.

4.2 Train performance

Sum	mary of objectives	The immediate plan operators have wide increasingly challen	for Anglia train services is substantial growth, backed up by major rolling stock replacement er plans for journey time reduction and other service improvements alongside an expectation ging due to headwinds of passenger growth, and the costed CP6 renewals plan giving only a	and new timetable for better train per small decrease in	es at the start of formance. How service affection	CP6. The ever, this will be g failures.
No.	Key constraints, risks opportunities	and	What we plan to do	Anglia route owner*	Customers impacted	Timescale (start-finish)
1	R: There is a risk that the changes that have been result of increased pass impact on performance.	the major timetable committed to as a senger growth will	Engage with train operators through timetable build process to help them build higher quality timetables, use lessons learned from major c2c timetable change and model timetable performance where possible. Appendix D contains an option for an additional initiative to increase resources dedicated to timetable performance.	HCR	ARL, GA, MTR	CP5-CP6
2	O: There is an opportun measurement and manage railway and subthreshold de	hity to improve the ement of right time elay.	Utilise new performance metrics for CP6 with analysis to be undertaken to review key regulation points such as Cambridge, Clapton and Ipswich. Grow right time railway groups jointly run with TOCs to identify and develop plans to address key issues.	HOP	ARL, GA, c2c, MTR	CP6 (preparation in CP5)
3	O: There is an opportur management and support of ways of working.	nity to drive asset 'predict and prevent'	Work with operators to specify new fleet with on-board infrastructure monitoring. The CP6 core funding plan includes funding to roll out more Intelligent Infrastructure (II) capability to cover points and track circuits. Route performance plan to monitor the performance benefits of existing II, identify assets that could be more reliably managed using II, and produce business cases to justify installation.	DRSAM	ARL, GA, c2c, MTR	CP5 (specification) CP6 (into business as usual)
4	R: There is a risk that the c plan results in little chang SAF, which is lower expectations.	costed CP6 business le to the number of r than customer	Promote business case for further minor works that can be undertaken to improve asset reliability when undertaking renewals – this is shared in Appendix D. Preventative maintenance plan and targeted renewals to reduce the number of incidents.	DRSAM	ARL, GA, c2c, MTR	CP5 (application for funding), CP6 (delivery)
5	R : There is a risk that DF may increase further due t and continued fleet / train c	PI is increasing and to more passengers rew inefficiencies.	Embed the Incident Officer (IO) organisation to focus on management of high impacting incidents. Negotiate effective regulation policies and service recovery agreements with operators.	SIO	ARL, GA, c2c, MTR	CP5 and into CP6
6	O : There is an opportunity of external effects i.e. weath	to reduce the impact her and crime.	Develop route crime and autumn / winter resilience programmes by building working relationships with other external agencies to mitigate likely risks from societal issues, passenger growth and climate change and to develop cost effective improvements.	HOP	ARL, GA, c2c, MTR	CP6 (ongoing activity)
7	R: There is a risk that the v stock entering into service start of CP6 across the ro will impact on performance.	volume of new rolling before, and at the ute for all operators	Engage TOCs during build and testing of units to understand and minimise performance and asset degradation impact. Ensure all risks to infrastructure are mitigated around signal sighting, level crossings and rail wear before introduction of new fleet. Include likely dip in reliability on new fleet introduction and impact of driver training on current services in the performance trajectory.	DRSAM	ARL, GA, c2c, MTR	CP5 (specification) and into CP6 (delivery)

For job titles please see Appendix G - Glossary Political/ Reputation Performance



Summary of risk outcome (N=current level of risk, T=forecasted level of risk at end of CP6)

Good train performance is an output of the whole railway system. The current trend is mostly static or worsening performance, resulting in both financial and reputational challenge. To manage the mix of opportunities and risks in CP6 will require strengthened performance resilience to stabilise the current trend and deliver improvement towards customer expectations. The renewals plan is likely to deliver only a small improvement in SAF numbers, which coupled with the expected increase in train count and passenger numbers, will give an overall decrease in performance outputs in CP6. A large timetable change and complete change of rolling stock for Greater Anglia brings short term risks and long term opportunities.

4.3 Locally driven measures

Sumi	nary of objectives	Planned objectives for this are locally driven customer meas	ea are under discussion with the operators for which Anglia is the lead ures consulted for the 2017/18 route scorecard.	route. This	follows consulta	ation on the
No.	Key constraints, risks	and opportunities	What we plan to do	Anglia route owner*	Customers impacted	Timescale (start-finish)
1	O: There is an opportunity relationship in a measurabl	to enhance and develop the TOC e way.	Enhance the new periodic customer scorecard to drive improvements to the way Network Rail and operators work with each other. It contains a variety of measures to be agreed with each operator and it is intended to give a clear objective measure of the effectiveness of the customer relationship.	HCR	ARL, GA, MTR, c2c	CP5 and beyond
2	R: There is a risk that the r bring significant change a through large investments stabling and radical timetab	new Greater Anglia Franchise will nd potential impact to the route s in new rolling stock, depots, ole changes.	A programme board has been established and is being managed by both Greater Anglia and Network Rail. A full enterprise risk review is established to mitigate the risks of the proposed infrastructure and service changes.	DRS	GA	CP5 and CP6
3	O: There is an opportun London Overground cor benefits to both parties.	ity to further develop the New ncession relationship to drive	Alliance Framework Agreement has been signed and the new 'Director London Rail' is in post and will continue to be through CP6. Work is continuing with Arriva Rail London to develop the relationship further for the remainder of their concession, with particular focus on the new fleet and timetable.	DLR	ARL	CP5 and CP6
4	O: There is an opportunit NRPS results and for it current all Anglia route s increase on 16/17).	y to sustain the improvement in to improve slightly in CP6 (the score of 87% represents a 6%	Support the introduction of new fleet by Greater Anglia. The route also plans to further collaborate with TOCs to improve overall customer experience and support the new Liverpool Street Station Manager to help drive significant local NRPS improvements.	HCR	ARL, GA, MTR, c2c and the passengers on the route	CP5 and CP6
5	R: There is a risk that as m network, more housing de more passengers expected the public and stakeholder the remainder of CP5 and f	nore work is conducted on the rail velopments near the railway and d to use the railway, contact from is forecast to increase by 15% for or CP6.	With a renewed focus on worker behaviour Anglia route expects to see an annual decrease in railway complaints of 2.5% across CP6 but this is set against a forecasted 2% increase in non-Railway Works related complaints owing to the ever growing ease of communicating a complaint that is available to the public.	HRC	Lineside neighbours, travelling public and TOCs	CP5 and CP6

* For job titles please see Appendix G – Glossary

Political/ Reputation



Summary of risk outcome (N=current level of risk, T=forecasted level of risk at end of CP6)

We are actively engaging with our train operator colleagues in developing the plans which will support their committed obligations. All operators have an ambitious and demanding set of obligations which are still in the process of being scoped out, therefore there is some risk in respect of how all of these can be delivered.

4.4 Sustainability & asset management capability

Sum	mary of objectives	To manage the operational assets v	vithin the route in order to meet the meet safety and performance targe	ts.	
No.	Key constraints, risks	and opportunities	What we plan to do	Anglia route owner*	Timescale (start-finish)
1	R: There is a risk that the will start CP6 worse than ta failures	e asset reliability CRI and SAF numbers arget, particularly for Signalling and Track	Recovery plans within CP5 are in place which are expected to deliver the forecasted CP5 exit level.	DRSAM	CP5
2	R: There is a risk that rent the levels required by Asset	ewals volumes within CP5 will be below t Policy	Opportunities and actions have been identified to deliver volumes in 17/18. Further review will be required for RF11 to set a robust plan for 18/19.	DRSAM	Sep17-Mar18
3	R: There is a risk that the required to manage assets	quality of asset data is below the level sustainably	Develop the Anglia capability for compliance with ISO 8000 (Data Quality) which will develop the systems to better manage asset data and improve the quality of the data held within the systems	DRSAM & COO	CP5
4	R: There is a risk that the v deliver the volume of work r	volume of track access is not available to required	Early engagement with TOC's and Freight operators supporting CP6 submission and development of on-going stakeholder engage process.	DRSAM & COO	CP5-CP6
5	O: There is an opport Management capability to a	tunity to develop the Anglia Asset align with ISO 55000	Develop the Anglia asset management capabilities for maintenance operations and renewals activities to meet requirements of ISO 55000.	DRSAM & COO	By March 21
6	O: There is an opportunity Planning tool to understa required across the route	r to use the maintenance Activity Based nd the works volumes and resources	RAM and Maintenance Engineers will use the tool to agree volumes and budgets and understand the benefits of renewals and impact of deferred renewals.	DRSAM & COO	Sep17-Mar18

* For job titles please see Appendix G – Glossary



Summary of risk outcome (N=current level of risk, T=forecasted level of risk at end of CP6)

The key issue for the Political/ Reputation risk is the volume of access the workbank will require. Travelling customers have an expectation for less disruption at weekends and bank holidays whereas the current level of disruption is expected to continue. The cost associated with the delivery of work within the available access is likely to increase however opportunities are being explored to find more efficient ways of taking track access.

4.5 Financial performance

Summary of objectives

To drive financial performance through a cultural shift as our teams strive to be better every day and remove waste from our core processes. This drive will ensure we deliver our efficiency plans, mitigate risks and maximise opportunities to achieve our score card targets.

No.	Key constraints, risks and opportunities	What we plan to do	Anglia route owner*	Customers impacted	Timescale (start-finish)
1	R: There is a risk that failure to meet CP5 efficiency plans will lead to Anglia breaching the funding envelope available in CP6	Efficiency plans are sponsored at executive level and are embedded in the business plan. The Change Team track these efficiencies on a periodic basis to ensure we are on course for delivery.	FD	All	CP5-CP6
2	R: There is a risk that failure to meet CP5 performance targets will lead to unbudgeted schedule 8 outflows and cause further work to be cancelled to remain cash compliant	Continue DPI funding to invest in performance schemes leading to improved asset reliability and response across key areas of the route through CP5.	SIO / HOP	All	CP5-CP6
3	C: There is a constraint around the route's ability to flex CP6 targets between Operations, Maintenance and Renewals (OM&R) to ensure Anglia is progressing the most effective asset management interventions	Work with planning and regulation colleagues to make a clear business case that this flexibility is crucial to making the correct maintenance, refurbishment and renewals interventions to drive the best outcomes.	FD / DRSAM	All	CP6
4	R: There is a risk that CP6 efficiency plans need detailed implementation plans to be developed to ensure delivery	CP6 efficiency plans are being embedded into each department, including via the maintenance Activity Based Planning tool to gain buy in at all levels.	COO	All	CP6
5	R: There is a risk that CP6 Traffic Growth may have a greater impact on asset degradation and performance than anticipated	Using risk and uncertainty analysis, we will supply high and low ranges as well as point estimates for traffic levels and OM&R across CP6. This will allow visibility of the risk in our plan and allow for effective review of contingency requirements.	DRSAM	All	CP6
6	R: There is a risk that integration of enhancement works after OM&R works are already remitted could lead to access challenges and inefficiency	Anglia to work closely with all stakeholders to understand the pipeline of potential enhancements and ensure works are remitted in time scales that lead to optimal integration.	DRS	All	CP6
7	O: There is an opportunity to integrate work and maximise access opportunities within the CP6 workbank to increase stability	Work with deliverers to develop the plan at optimum time scales, and ensure any additional work is only added to the plan if it doesn't compromise planned activities.	DRSAM	All	CP6
8	O: There is an opportunity for early engagement with contractors to maximise efficiency during CP6	Work with IP and route services to ensure contracts are in place to allow work to begin at the start of CP6, and that work is packaged in the most effective way to maximise efficiencies.	DRSAM	All	CP6

* For job titles please see Appendix G – Glossary Political/ Reputation



Value

Summary of risk outcome (N=current level of risk, T=forecasted level of risk at end of CP6)

Our key financial risks in CP6 relate to the Traffic Growth and Efficiency plans embedded into our settlement, as variation in these assumptions could lead to a material difference in the funding required for Anglia route in CP6. We have used risk and uncertainty analysis to highlight our range of financial outcomes, and have plans in place to mitigate these risks where possible.

5. Activities & expenditure

5.1 Cost and volume

The following tables provide a high level summary of the renewals costs and volumes, operations and maintenance, and enhancements costs for CP5 and CP6 associated with the delivery of Anglia's route strategic plan. This plan is predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change. The "DR programme" shown below is in addition to the core plan and therefore not within the core submission.

	Unit of	Eurodod by			CP5 (£	m) (RF11a	1)				CF	P6 (£m)			CP7 (£m)
	Measure	Funded by	14/15	15/16	16/17	17/18	18/19	CP5	19/20	20/21	21/22	22/23	23/24	CP6	24/25
Track	£m	Renewals	81	84	89	71	77	401	83	99	64	90	73	410	82
Conventional Signalling	£m	Renewals	44	21	18	36	50	168	34	77	96	113	27	347	69
Structures	£m	Renewals	20	24	24	18	18	104	33	24	29	37	28	151	30
Earthworks	£m	Renewals	14	14	1	2	2	33	12	12	14	9	3	50	10
Drainage	£m	Renewals	0	1	1	1	1	3	0.7	0.5	0.7	0.4	0.8	3	0.6
Buildings	£m	Renewals	12	11	6	10	12	50	8	14	22	9	1	53	11
Electrification & Fixed Plant	£m	Renewals	29	23	45	32	12	142	27	41	49	47	42	206	41
Other	£m	Renewals	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Renewals	£m	Renewals	200	177	185	169	172	903	198	267	275	305	175	1220	244
Digital Railway	£m	DR Programme	0	0	0	0	0	0	34	60	28	44	56	221	44
Total Renewals + Digital Railway	£m	All	200	177	185	169	172	903	232	328	302	349	231	1442	288

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

*Each number has been rounded to the nearest whole number, including the total (except drainage as the numbers are smaller than 1)

KEY VOLUMES

		Funded by			СР5 (RF11a)					CI	P6			CP7
	Unit of Measure	Funded by	14/15	15/16	16/17	17/18	18/19	CP5	19/20	20/21	21/22	22/23	23/24	CP6	24/25
Plain Line	Linear track m	Renewals	61418	116330	107251	53594	52985	391579	91274	169092	99322	109118	51419	520224	104045
S&C	No. of S&C units	Renewals	72	52	33	51	70	278	145	158	43	82	5	433	87
Conventional Signalling	SEU	Renewals	7	2	1	0	97	106	0	48	45	272	73	438	86
Digital Railway	SEU	DR Programme	N/A	N/A	N/A	N/A	N/A	N/A	0	288	6	70	13	377	75
Embank/Soil Cut/Rock Cut	No. of	Renewals	208	191	20	10	10	439	188	205	190	159	56	798	160
Underbridges	Number of assets intervened on	Renewals	N/A	N/A	N/A	N/A	N/A	N/A	17	26	18	20	28	109	22
Underbridges	m2 plan deck area worked on	Renewals	4257	8082	2648	1354	1220	17561	2400	5304	4501	5409	5280	22894	4579
Wire runs	No. of	Renewals	16	12	6	15	19	68	42	39	45	50	50	226	45
Conductor Rail renewal	Km	Renewals	0	0	0	0	0	0	0	0	0	0	0	0	0

			СР	5 (£m)					CP6	(£m)			CP7 (£m)
	14/15	15/16	16/17	17/18	18/19	CP5	19/20	20/21	21/22	22/23	23/24	CP6	24/25
Track	46	48	47	48	48	238	53	52	53	53	52	262	53
Off track	10	11	11	11	11	53	12	12	12	12	12	59	12
S&T	22	23	22	23	22	112	23	23	23	23	23	116	23
E&P	13	13	13	13	13	65	15	15	15	15	15	73	15
DU HQ	20	21	21	21	21	105	25	24	18	17	17	100	16
DU/WD Maintenance excl. B&C	112	116	113	116	115	572	127	126	120	119	119	611	119
Non DU Maintenance													
Civils: Buildings Maintenance	-	-	4	6	6	16	4	4	4	4	4	20	4
Civils: Structures Maintenance	-	-	2	1	1	4	2	2	2	2	2	10	2
Civils: Earthworks Maintenance	-	-	1	1	1	2	1	1	1	1	1	5	1
Total Maintenance Costs	112	116	120	124	123	594	134	133	127	126	126	646	126
Operations	53	52	56	53	54	269	57	53	53	53	53	271	52
Support	4	4	4	5	5	21	5	5	5	5	5	27	5
Operations & Support Costs	57	56	60	58	58	290	62	59	59	59	59	298	57
		-	-	-				-					
Total Controllable Costs	169	172	180	181	181	883	196	192	186	185	185	944	183
Non-Controllable Costs	0	0	0	0	0	1	-	-	-	-	-	-	0
Headcount													
Permanent	2,318	2,367	2,445	2,465	2,472	2,472	2,606	2,565	2,516	2,516	2,516	2,516	2,516
Agency	18	5	11	9	8	8	-	-	-	-	-	-	0

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

To prevent re-planning activities each time a risk materialises in CP6, which would be inefficient, this strategic plan includes £61m of route headroom. This has been created by holding back some SoFA (Statement Of Funds Available) funding from Network Rail's overall CP6 plan. This route headroom is particularly for the business performance risks that Anglia faces in the control period.

Actual results are planned to be in line with the CP6 plan. Should this be achieved, this headroom could be released to invest in improving the railway – this headroom can therefore be considered as contingent investment. The phasing of the headroom across CP6 is as per the table below.

	19/20	20/21	21/22	22/23	23/24	CP6 total
Route headroom	5	9	14	14	19	61

If needed, Anglia will also be able to access portfolio headroom in CP6, particularly for inflation risk. Should this not be required it will be spent on further investment to improve the railway. Portfolio headroom will be controlled through the Network Rail corporate business planning process. Increased investment will depend on successful delivery of the Network Rail's plans and business cases proving good returns on investment.

ENHANCEMENTS

The schemes listed below include the current Anglia route enhancements delivery plan projects.

<u>CP5 Major Programmes or Enhancement Delivery Plan (EDP) Projects</u> which have passed Final Investment Decision:

- **Crossrail:** Delivers 'on network' works to support increased capacity required for the new Elizabeth Line timetable to be implemented from May 2019 with 12tph from Shenfield through Central London and 4tph into Liverpool Street. Anglia is also undertaking small enabling packages of work to support the successful delivery of the timetable.
- WAML CP5 Capacity Improvement: Creates additional capacity to support demand in the Lea Valley areas through an additional 2tph between Meridian Water and Stratford. This project has secured third party funding as it helps deliver 10,000 new homes.
- Gospel Oak Barking Electrification: Electrification of a section of the North London Line and infrastructure to enable new, longer electric rolling stock, increasing both passenger and freight capacity.
- **Power Upgrade Programme:** Provides additional electrical capacity to support infrastructure upgrades required for the introduction of new rolling stock and additional train paths to deliver additional capacity. Works have been completed to upgrade the power for the West Anglia (WA) inner service group; works are continuing to deliver power upgrades to the WA outer services in Dec 2017 and Mar 2018.
- Felixstowe (F2N workstream): Provision of passing loops to facilitate additional freight services from the port as part of the Felixstowe to Nuneaton (F2N) programme.

<u>CP5 Major Programmes or Enhancement Delivery Plan (EDP) Projects</u> which have CP5 funding, but not yet passed Final Investment Decision:

• Kings Lynn 8 Car (included under Ely Area Capacity Enhancements): Enables longer services to Kings Lynn.

Third Party significant enhancement schemes:

- Greater Anglia Franchise Supporting Infrastructure Works: Network Rail has been working collaboratively with Greater Anglia to develop and deliver the necessary infrastructure works required to deliver the Greater Anglia franchise commitments. The franchise introduces an entire new fleet of trains, significant timetable change, faster mainline services, gauging works, new depots and stabling, level crossing works and power supply works. Greater Anglia is funding Network Rail to complete these works which will continue into CP6.
- LOTRAIN Supporting Infrastructure Works: Network Rail is supporting the engineering acceptance and mobilisation activities required to support the roll out of Class 710 trains across the London Overground network. Three Network Rail routes are affected but the Anglia route is leading and co-ordinating all activities. The costs for these works are recovered through third party funding agreements.
- **Liverpool Street Platforms 16-18 Train lengthening:** Crossrail Ltd is funding the development of optioneering and outline design works for all platforms at Liverpool Street station to be capable of accepting 9 car units which would require the closure of platform 18 and the lengthening of platforms 16 and 17. These works would optimise the operational flexibility and performance resilience of the Elizabeth Line timetable from May 2019.
- **Barking Riverside:** Extension to the London Overground network from Barking to provide a new station at Barking Riverside. This scheme is funded by Rail for London.
- **Beam Park:** This is a proposed new station funded by the Greater London Authority and Haringey Council. The station will support significant new housing developments and is a key mayoral priority.

<u>CP5 Major Programmes or Enhancement Delivery Plan (EDP) Projects</u> which have not yet passed Final Investment Decision for post-CP5 funding and are still in development:

- **Bow Junction:** Addresses capacity constraints between Shenfield and London Liverpool Street by remodelling Bow Junction and other associated infrastructure to support a reliable and robust train service on the introduction of additional train services. The project will release the capacity required for when Elizabeth Line services use the central tunnels rather than Liverpool Street Platforms.
- Ely Area Capacity: The deferred CP5 Ely North Junction scheme has been integrated into the large Ely Area Capacity Enhancement scheme. This scheme is expected to include freight headway improvements, structure and level crossing works, Ely Station track layout works and power supply works which will assist in enabling additional freight and passenger train paths to be accommodated through the Ely area, improving connectivity, capacity and journey times. Ely-Soham doubling project to facilitate additional freight services from the Port of Felixstowe is an identified funding priority for the Strategic Freight Network (SFN).

Potential CP6/7 capacity enhancement schemes as detailed in the Anglia Route Study:

- Liverpool Street Station Capacity: The new Greater Anglia franchise brings forward the anticipated station congestion challenges as each peak hour train can accommodate approximately a third more passengers. There is a need for additional platform and station capacity today and to meet the forecast for future station use.
- **GEML Capacity improvements:** This project which is in development would improve capacity along GEML and also at Haughley Junction. However, as with the other CP6 enhancement projects, this project is unfunded and is therefore not included within the scorecard outputs.

DIGITAL RAILWAY (in 17/18 prices)

Network Rail Anglia route has developed a Strategic Outline Business Case (SOBC) for a series of digital railway technologies to be delivered in the Anglia route which would provide additional performance resilience and capacity improvements focussed on the Great Eastern Main Line (GEML). The route funding request as outlined in the table below is in addition to the core submission of £2,164bn for Anglia in CP6 and is currently unfunded.

	Development stage:	SOBC	BCR	3.3
Anglia Digital Programme (option 3a)	Expected delivery	ETCS 2028-2029	Appraisal period	60 years
	year:	TM 2020-2024		oo years

Summary description

The Anglia Route Study forecast demand on GEML to grow by 75 % from 2011 to 2043. New rolling stock being introduced by the new Greater Anglia franchise will increase capacity, however, there is still forecast to be a capacity gap from CP7. There is also the need to improve performance of both passenger and freight services, current train control operations do not offer visibility of the wider network which can lead to train regulation decisions that are not optimised. Command Control and Signalling Assets are due for renewal in CP7 and the Liverpool Street IECC is planned to transfer to the Romford ROC in CP6, presenting an opportunity to renew with digital technology.

Scheme: ETCS level 2 no signals between Stratford and Chelmsford, integrated Traffic Management between Liverpool Street and Colchester/ Stansted, isolated Traffic Management on the North London Line, GOB, and to Ipswich/Felixstowe, option for C-DAS. Conventional enhancements to support capacity benefits - Witham Dynamic loops, Trowse Swing Bridge Doubling and Liverpool Street platforms.

Implementation	n cost (£m)			Assumed funding	g source (I	£m)		
	CP5	CP6	CP7 & beyond	Total		CP5	CP6	CP7 & beyond	Total
Digital Infrastructure	20.3	202.4	524.5	747.2	Core Route Budget (OMR)	0.0	0.0	628.4	628.4
Business Change	0.0	19.0	14.8	33.8	National Productivity Investment Fund	0.0	0.0	0.0	0.0
Freight/OTMs in-cab fitment	0.0	0.0	89.2	89.2					
Sub-Total (assumed core NR funded)	20.3	221.4	628.4	870.2	Sub-Total (assumed core NR funded)	0.0	0.0	628.4	628.4
Passenger in-cab fitment	0.0	0.0	72.5	72.5	Franchise in-cab fitment	0.0	0.0	72.5	72.5
Enabling Physical Infrastructure Enhancements	0.0	15.9	302.2	318.1	Enhancements (MoU)	0.0	15.9	302.2	318.1
TOTAL	20.3	237.3	1,003.2	1,260.8	TOTAL	0.0	15.9	1,003.1	1,019
Scheme benefits ¹									

Quantified output benefits

Capacity benefit resulting in crowding, journey time - an additional 4 tph in the high peak hour (27tph total) starting in CP7 Performance benefits - reduction of delay minutes by between 4-6% starting at the end CP6

¹ Benefits quoted for schemes may be subject to delivery of other enhancement schemes not yet integrated into this plan

Financial benefits (£m CP6): Socio economic benefits in 2010 prices, present value	Financial benefits (£m NPV over 60 years): Socio economic benefits in 2010 prices, present value
TOC revenue benefits: 0.0	TOC revenue benefits: £413m
Reductions in Network Rail OM&R: 0.0	Reductions in Network Rail OM&R: 0.0
Net benefits to consumers and private sector: 0.0	Net benefits to consumers and private sector: £1,104m
TOTAL: 0.0	TOTAL: £1,517m

Other qualitative benefits

Safety - ETCS offers enhanced train protection reducing the risk of SPADs. Digital Railway technologies enable the Safer Trackside Working strategy, reducing the risks to track side workers Journey time - potential for journey time opportunities where speed restrictions are in place due to signal sighting, changes to operational rules Other opportunities - improved customer information,

Other dependencies

Capacity benefits - Bow Junction remodelling, Haughley Junction doubling (planned for CP6 as part of the Strategic Freight Network) and Liverpool Street Station congestion relief

Digital Railway (DR) ready specifications

Passive provision

For like-for-like renewal (e.g. no capacity enhancement), provision for DR Ready specifications is termed **passive provision**. For these schemes, a DR Ready specification is assumed not to add material cost. This is based on the following assumptions:

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

Schomo	Provision	Activity/scope	changes (£m)	Net change to	Funded by
Scheme	type	Drivers	Efficiencies	plan (£m)	i unueu by
Cambridge	Passive	0.0	0.0	0.0	Renewals
TOTAL		0.0	0.0	0.0	Renewals

5.2 Asset intervention strategy

The asset intervention strategy has been developed in line with the asset management strategy and focuses on asset reliability within deliverability and funding constraints. Priority has been placed on delivery of the route's strategic objectives, specifically around supporting the additional demand on assets to enable an uplift in passenger and freight volumes.

Network Rail's Safety, Technical, and Engineering Directorate (STED) have provided a set of modelled renewals volumes to help set a baseline for the workbank during CP6. A bottom up (site specific) workbank was developed based on asset condition and identifies the interventions that are required to meet an acceptable level of safety and reliability based on asset policy produced by STED. Each activity within the workbank has been prioritised first based on its impact on safety, and then on performance. The value of the overall workbank was 'capped' at a value that was considered to be affordable; this level represents a small increase on the value of the CP5 workbank. The starting point for each asset workbank was one that was comparable with CP5 in volume. Then a process of cross-asset prioritisation was undertaken to achieve a balance across asset groups, ensuring that the workbank will deliver a safe and then reliable network served by realistic maintenance volumes. The volume of maintenance work required was taken into consideration when determining the final workbank.

The output of this is a route CP6 workbank that is considered to be sustainable – in that it is not creating undeliverable peaks for future renewals; affordable – in that the total cost will not be a significant increase on CP5 costs; and deliverable – in that the volume work can be delivered within the resources (including track access) available.

In summary for each asset workbank:

- The Track workbank is the major part of the costs within the CP6 submission and focus has been placed on reducing the risk of broken rails and catching up on some of the renewals back log created by CP5 OLE works taking priority over track – these work activities are not compatible and access is not available for undertaking both.
- The key part of the OLE workbank is the start of a refurbishment programme of OLE equipment installed in the early 1960s. The driver for this is asset condition and poor reliability and this is a programme

that will extend into CP7 and CP8 due to funding and deliverability constraints. During CP6 there will be a continued focus on defect removal (undertaken by maintenance) and targeted component replacement campaigns to deliver an acceptable level of system reliability.

- The major items within the signalling workbank are two major interlocking renewals, two signalling re-controls, four life extension schemes, and a volume of level crossing refurbishment which are driven by asset condition. To reduce overall costs, there will be a programme of condition led life extension interventions to other signalling interlockings rather than full renewals.
- The Structures workbank focuses on a limited number of high risk locations where the assets are at the end of their theoretical life. The Structures risks will be managed via additional maintenance and reactive activity. The replacement of the roof at Liverpool St station has been prioritised over other items due to the risk and condition.

Delivering the asset reliability targets is key for the delivery of the train performance forecasts. The benefit of both the renewals and the maintenance programmes have been taken into consideration and this has been balanced with the impact of the additional train services that are expected to operate during CP6. The delivery of the track renewals workbank will have the biggest benefit on reducing the number of infrastructure service affecting failures (SAF) as the renewal programme targets older track systems that are less reliable. The delivery of the vegetation maintenance plan is the key activity that will support delivery of the OLE SAF target.



5.2.1 Track asset intervention strategy

KPIs	Baseline Total (Year Five CP4)	Current Total (Year 3 CP5)	CP5 Forecast Total (Year Five CP5)	CP6 Forecast Total (Year Five CP6)
Service Affecting Failures (SAF)	778	743	730	680
Composite Reliability Index (CRI)	0%	-3.5%	0.9%	5.0%

In CP5 the significant losses of S&C and Conventional Plain Line renewal volumes in Year 1 (due to contractor handover issues) and subsequent loss of High Output Plain Line renewal volume delivered in Years 3 & 4 (due to access issues) have put delivery of the routes Track CRI exit target at risk. As SAF is based purely on incident count and not affected by criticality band (CB) weighting, deferrals which are primarily on CB 1 & 2 routes (approx. 85%) has not provided the same level of risk to delivery of the SAF exit target as it has to CRI.

The proposed CP6 renewals workbank is expected to deliver an improvement in Track CRI and an improvement in SAF at the exit of CP6. It has been assumed that the total delivered Track volumes across all activities in CP5 will be 20% higher than the forecast volume for exit of CP5 at RF2 (2016/17).

The track sub-set of the CP6 workbank was developed using²:

- Modelled track volumes provided by STED to guide workbank development and highlight deviance from Track Asset Policy.
- Historic 'run rates' from CP4 and CP5 to estimate non-volume work activities.
- 'Bottom up' workbanks generated though joint RAM Track and TME reviews to produce renewal volumes for Plain Line (Conventional & High Output), S&C (including abandonments) and Re-Railing.
- Historically delivered maintenance volumes by Engineering Line Reference (ELR) and Fault Management System (FMS) performance data to generate Plain Line and S&C refurbishment volumes.

Items within the track workbank are also supported by individual problem statements, site specific renewal proposals and risk assessment and prioritisation sheets.

For assurance, the Linear Asset Decision Support (LADS) software was used by the RAM Track team to confirm all assets subject to specific Track Policy renewal or refurbishment strategy. To provide secondary assurance on the robustness of prioritisation, the Track Decision Support Tool was used. Finally, alignment with the modelled baseline Track volumes provides a level of assurance for compliance to Track Asset Policy.

Whilst all of the route Plain Line renewal and refurbishment volumes and S&C renewal volumes comply with asset policy, S&C refurbishment volumes are 31% lower than the modelled baseline. This reduction is due to heavy refurbishment activity carried out in CP5 on S&C, coupled with the Anglia route having very few 'old' concrete bearer units to re-ballast. Experience with refurbishment and maintenance of timbered layouts through the route in CP5 has shown that good track geometry and guality improvement can be achieved through S&C stone blowing rather than through re-ballasting, allowing for the further reduction. Additional units of S&C complete renewal have also been included to cover items that were deferred enhancement schemes in CP5. Finally, a 30km conventionally delivered renewal (Cat 11) has been moved to High Output (HO) to take advantage of the HO's ability to operate on a two track railway on weekends/weeknights with adjacent single line working, increasing productivity and reducing the requirement for disruptive weekend track access.

Rail milling will be used to address locations with Rolling Contact Fatigue (RCF).

² Renewals activities are based on 2016/17 Track unit rates provided by IP (at 17/18 prices), refurbishment and non-volume activities are based on 2016/17 Works Delivery unit rates from RF2 data and historic information was used for the remaining activities.

5.2.2 Signalling asset intervention strategy

KPIs	Baseline Total (Year Five CP4)	Current Total (Year 3 CP5)	CP5 Forecast Total (Year Five CP5)	CP6 Forecast Total (Year Five CP6)
Service Affecting Failures (SAF) Points	363	306	280	293
Service Affecting Failures (SAF) Signalling	1433	1288	1290	1265
Composite Reliability Index (CRI) Points	0%	13.6%	18.0%	-3.9%
Composite Reliability Index (CRI) Signalling	0%	7.6%	2.2%	2.0%

The CRI for points at the end of CP5 is anticipated to be lower than initially forecast as it has been affected by the volume of deferred S&C renewals during CP5. This has resulted in a rise in failures in year 2 of CP5. Points have been the focus of additional maintenance and component replacements interventions and the reliability of points have since improved. This includes the fitting of Schwihag rollers to all points in CRI1 and 2 areas. Signalling CRI is anticipated to be in line with forecasts and the current maintenance and renewals plan is expected to deliver a slight improvement in the last 2 years of CP5 and then remain constant during CP6. This will be delivered by an increase in procurement of Trackside Function modules and replacement of life expired processors at Liverpool Street and Upminster IECC. Finally, the Norwich – Yarmouth – Lowestoft signalling is currently planned for delivery in late CP5; therefore there is a risk to the current CP6 plan if this project is further delayed.

The CP6 plan comprises of two major interlocking renewals, two signalling re-controls, four life extension schemes, a volume of level crossing refurbishment, and is independent of anything proposed as part of the Digital Railway programme. The two major renewals are Cambridge and Clacton both of which have been deferred from CP5:

- Cambridge: Only Cambridge Interlocking will be re-signalled, however life extension and re-control works will take place on the Cambridge outer interlocking's to control costs.
- Clacton: The mechanical systems will be replaced with equipment to match the mainline signalling system that was delivered in CP4.

The main life extension programme is on the North London Line with a refurbishment being carried out on the Dudding Hill and Richmond branches, Bollo Lane, South Tottenham and Upper Holloway areas to allow safe and reliable operation until CP8. Re-control of the system is also proposed to take place. In CP5 a new LUL signalling system is being installed covering Richmond. This means that a life extension, rather than full renewal, represents the most cost effective solution until the renewal is compatible with this new system.

The plan allows for the renewal of the equipment on 16 level crossings. Additionally, due to the constrained submission, many Level Crossing policy compliance aspects for CP7 and beyond are not included in the core workbank, meaning further safety benefits, in addition to those described in the scorecard, will not be derived.

There is no significant change in asset volume or type anticipated so there will be minimal impact on the existing maintenance volumes. The volume of renewals planned are the minimum required to achieve compliance with signalling policy. The delivery strategy for the refurbishment works is being developed.

5.2.3 Electrification and Plant (E&P) asset intervention strategy

KPIs	Baseline Total (Year Five CP4)	Current Total (Year 3 CP5)	CP5 Forecast Total (Year Five CP5)	CP6 Forecast Total (Year Five CP6)
Service Affecting Failures – AC Electrification	298	182	210	200
Service Affecting Failures – DC Electrification	2	1	1	1
Service Affecting Failures – Non Traction Power Failures	50	34	45	40
Composite Reliability Index (CRI) Electrical Power	0	37.4%	25.2%	10.2%

Proposed CP6 volumes are based on a prioritised but deliverable workbank and are less than those modelled by STED. There is a risk of an under delivery of renewals volumes in the last two years of CP5 due to the impact of resource demands from higher priority enhancement projects. This would roll work into CP6 which would need to be accommodated by a re-prioritisation of the workbank.

Renewal of the OLE at Stratford is required to improve reliability and remove heat-related risk in CP6. This is the final part of the GE re-wire project which targets the life expired, obsolete 1940s OLE system. It is a complex renewals work requiring significant access. A stakeholder engagement strategy has been developed to identify a suitable delivery methodology for this piece of work. If the renewals work is undeliverable, the funding will need to be transferred to the maintenance team to maintain reliability of the equipment.

Commencement of the refurbishment of the Mk1 equipment OLE equipment, which was installed in the early 1960s, is the focus for the CP6 E&P workbank. 165 wire runs (of a total 649) on the Essex Thameside main lines from Fenchurch Street to Barking and the Tilbury loop line are proposed for refurbishment during CP6. The current proposal does not provide a Technical Standard for Interoperability (TSI) compliant solution due to the additional cost and complexity this would require. If this project identifies that compliance is required then a cross functional review of the workbank would be needed to establish which volumes should be constrained in order to remain within the funding limits.

Renewal of the 132kV Circuit Breakers at the Barking National Grid, the associated 132kV cables and the 25kV incoming feeder cables from Barking Grid to Barking Network Rail feeder station will also be a priority for CP6. There are no points heating renewal volumes in this submission

due to workbank prioritisation which will give rise to a small risk in winter periods of points freezing over, where heating is not already installed.

As the strategy for signalling asset renewals is based on a conventional solution (but will be Digital Railway ready), this will trigger the renewal of Great Chesterford, Liverpool Street Platform 10 and Fenchurch Street principal supply point. Approximately 230km of signalling power distribution cable is proposed for renewal and, whilst it is not anticipated that maintenance volumes will be affected, allowance is being made to continue the signalling power supply cable management, introduce a technical team within E&P maintenance and cover the on-going support cost for a national SCADA system.

Despite this work, the increase in the number of service affecting failures and the corresponding drop in the CRI is forecast due to the impact of additional services on the GE inner area and changes to power supply equipment. An increase in short duration faults which impact a larger volume of trains is forecast, resulting in more service affecting failures above 3 minutes. The impact on CRI is due to this area being in the highest track category so the corresponding incident weighting is greater.

CRI is generally anticipated to be negatively impacted through the increase in overall asset age and increased failures rates, however there are proposals for improving the resilience of assets such as by removing all OX36 circuit breakers which have a known failure mechanism.

Finally, specific safety improvement proposals focus on correcting bonding installations, bonding records, buried earth wire and missing along track conductor. There is no other provision for any additional safety improvements as identified within the asset policy.

5.2.4 Structures asset intervention strategy

KPIs	Baseline Total (Year Five CP4)	Current Total (Year 3 CP5)	CP5 Forecast Total (Year Five CP5)	CP6 Forecast Total (Year Five CP6)
Structures – No. of open work items with risk score ≥ 12	293	87	137	105
Buildings – No. of re-active Faults (2hr & 24hr)	607	483	510	599
Earthworks No. of failures – 5 year average	3.6	4	4	4
Composite Reliability Index (CRI) Structures	0%	69.5%	49.0%	24.5%
Composite Reliability Index (CRI) Buildings	0%	20.4%	16.0%	-17.5%

A comprehensive review was undertaken of the structures portfolio which identified all works required to the assets to achieve policy compliance and was built into a bottom up workbank. A risk score was allocated to each asset based on a matrix - the highest risk score items which would likely lead to a failure with injuries or fatalities, a failure leading to a line or road closure, or a reduction in line speed or Route Availability (RA) result were planned to be addressed during CP5. The proposed CP6 workbank consists of structures which were deferred from CP5 in 15/16 and includes the highest risk scores items which the route considers would likely lead to a reduction of line speed, RA rating or worse. The plan is robust; identifying assets requiring work and also considering deliverability.

This submission contains the highest risk score items - all of which are policy requirements. Policy Prioritisation Guidance has been used to ensure that the highest priority items are in the business plan. However, the proposed volume of work does not make the structures portfolio policy compliant. Unit rates have been used to price the proposed workbank. These rates were developed by the Anglia IP team and their deliverer based on schemes which had been delivered and schemes which had 'bottom up' estimates.

There is no work proposed to major structures³ within Anglia; however they will be managed through a reactive asset management approach. This may result in operational restrictions and a negative impact on performance KPI's but the route will manage the risk effectively.

³ Swingbridges: Reedham, Somerleyton, Oulton Broad, Trowse Viaducts: Manea, Bishopsgate Goods Yard Bridge: River Thames

5.2.5 <u>Geotechnical asset intervention strategy</u>

Funding re-prioritisations during CP5 have seen earthworks interventions from years 3 to 5 be deferred into CP6. CP6 affordability and cross-asset prioritisation reviews have resulted in volumes being below STE minimum volumes. Whilst this will lead to a gradual reduction in overall asset condition and increase the risk of asset failure, the route will manage the risk. Any adverse weather may also potentially increase the volume of reactive work.

The CP6 workbank has a continued focus on earthworks embankments, earthworks crest and toe drainage and a preference for soil nails for more robust renewals interventions. Funding has also been identified to stabilise the historic embankment instability at Stour Wood in Wrabness and interventions are planned for the highest priority Weather Resilience and Climate Change Action Plan sites. In addition, funding has been assigned to assist in the management of a limited section of ongoing settlement on the 55 miles of railway track on the peat Fens with potential ballast undercutting and cess retention trial sites and research into bacteriological stabilisation.

The Risk and Observational Design approach of Value Engineering is an innovative risk based approach that will continue to be used to focus the extent of cost effective earthworks mitigations within a specific site, to then release funding to maximise improvements across the wider portfolio. Extensive manual instrumentation monitoring of the more sensitive earthworks sites and Remote Condition Monitoring of the most sensitive earthworks will be undertaken to aid the design, ongoing prioritisation and urgency of physical earthworks interventions. Continued analysis of inspection and monitoring data will be used to verify or further reprioritise the planned earthworks interventions including scheme movements between constrained and unconstrained workbanks.

5.2.6 Buildings asset intervention strategy

Anglia's business planning approach for buildings is based on a bottom-up review of its assets used to identify those that do not meet policy targets. The workbank was built using a combination of detailed asset knowledge and includes work items previously deferred during CP5.

Key assumptions in the plan are: Stratford High Level station transfers to TfL, under a full repairing lease before commencement of CP6; stations on

Arriva Rail London and GTR lines would remain under standard franchise terms during CP6; and that Light Maintenance Depots will remain under standard franchise terms with the TOC's throughout the control period. Norwich Crown Point depot will be reviewed as part of the New East Anglia Trains programme with Greater Anglia.

The proposed workbank has been prioritised and therefore does not allow for all known asset issues to be remediated, therefore there is an increasing risk of asset failure for assets where no remediation has been identified. Where possible, the scope of intervention has been reduced to ensure continuous usage of assets as far as reasonably practicable. Sustainable initiatives have been de-prioritised, such as insulation improvement to critical signal boxes and depot buildings to reduce operating energy costs and no provision for upgrades or renewal of existing depot facilities. As a result, reactive response to asset failure may increase in CP6.

5.2.7 Drainage asset intervention strategy

The drainage plan is likely sufficient to manage safety risks to tolerable levels, but does not reduce the safety or performance risk to below current levels. The performance of drainage assets influences track SAF and CRI, plus earthworks CRI and the plan will likely maintain drainage's influence on these KPI at CP5 levels through CP6. There is a risk that legal action may increase as the prioritised workbank may not be sufficient to enable the resolution of flood-related neighbour complaints. However, this will be managed by the route. Furthermore, the volume within the plan will not meet the objectives and outcomes described in Network Rail's CP6 Drainage Asset Policy and no allowance has been made for schemes whose purpose is to increase resilience or adapt to climate change.

5.2.8 <u>Telecoms</u>

The Anglia route works in collaboration with the Network Rail Telecoms team to ensure that the telecoms plan supports the Anglia route plan. The telecoms renewals plan for Anglia, to be funded through the Telecoms Business Plan includes the following:

• Network (£3.3m): The primary budget is based on power support elements of the network and has been derived by reviewing the age profile of the network.
- Operational (£1.7m): The budget is targeted at level crossing improvements and telephone concentrator work.
- SISS (£2.9m): This will deliver the renewal of the Liverpool Street Public Address and Voice Alarm (PAVA) system.
- Other (£1.3m): Reactive minor works budget, including cables and routes.

The themes for Telecoms for CP6 will support a safe, high performing, efficient and sustainable railway for Anglia. The key themes are:

- Transitioning to a single IP telecommunications network: This will improve availability, performance and exploit new technology and extend the use of assets for passengers.
- Standardisation of assets and services: This will deliver open architecture which enables secure 'plug and play' of telecoms asests to reduce cost and complexity of assets.
- Mitigation of the decline of asset sustainability level: This will rectify underinvestment in assets from previous control periods to improve the sustainability of the telecoms assets.
- Extending the use of telecoms assets and infrastructure: Telecoms assets and infrastructure are required to underpin Digital Railway, mobile connectivity on trains and digital inclusion for lineside neighbours.

5.2.9 Research and Development

The Anglia route is always looking to exploit research, development and technology to improve the way that the route is operated, maintained and renewed.

Intelligent infrastructure and the use of predict and prevent, from both track side and train-borne equipment, to enable failures to be identified and fixed before they occur is of focus for the route over CP6. This will include exploiting opportunities for collecting more data from the new rolling stock to be introduced across the network.

Data analysis of this data is also key. The route is therefore proposing to invest to ensure that analysis is robust and provides the ability for targeted interventions to the asset to be made.

The proposal for wider roll-out of digital management in the form of Traffic Management within CP6 will provide greater ability for targeted interventions to the operational service to be made to minimise delays.

The route is also currently undertaking additional research for Earthworks which include:

- Bacteriological stabilisation of peak in conjunction with the London South Bank University
- Acoustic detection of rock fall and mudslides
- Clay desecration monitoring using electrokinetics.

5.2.10 Weather Resilience

This submission does not include any specifics schemes for which the only driver is the impact of climate change other than where engineering policy mandates specific solutions which take into account climate change mitigations.

5.3 Operational plan

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

Good performance is a key requirement for passenger satisfaction, drives benefits to customers and passengers, and should make the railway safer. The wider industry plan recognises the need to improve performance (integrated with other improvements) and the need for funding to deliver this. In CP6 the number of Anglia route infrastructure asset service affecting failures is forecast to improve slightly against the CP5 exit. However, this is overlaid with the introduction of new fleet, an expected increase in train count and increase in passenger growth. Together this means that train performance is generally forecast to stabilise in CP6.

The table on the following page shows the percentage increase in the number of trains forecast to run on the Anglia route between the end of CP5, and the start of CP6, for each of the Anglia route lead operators.

Operator	% increase in the train count from Year 5 CP5 to Year 5 CP6
c2c	1.0%
Greater Anglia	6.2%
London Overground	1.0%
TfL Rail	10.0%

Anglia will continue to work closely with operators to identify how further continuous improvements can be made to make the railway run better every day, as all stakeholders play a role in delivering excellent performance. The route culture change plan (as summarised in section 8.2) is integral to assisting in this delivery. For customers, whilst performance will stabilise, they will benefit from faster, more frequent services.

An eight point performance plan was launched in October 2017 focusing on themes that are expected to be challenges through the end of CP5, and into CP6:

- Timetable
- Fleet
- Track and Non-Track failures
- External issues
- Operations
- Fault Prediction
- Response
- Speed Restrictions

These focus areas are linked to the operations strategy objectives of improving incident management and reducing delay per incident; and the renewals and maintenance objectives of targeted renewals, predict and prevent maintenance, and enhanced response.

Key initiatives include embedding the incident officer organisation, introducing traffic management technology starting with a trial on the Thameside route, a Lean review of response procedures, increased asset coverage by Intelligent Infrastructure, improved reporting to proactively identify trending in KPIs, analysis to understand sub-threshold delay and identify locations where punctuality is poor, and continuing to develop right time railway groups. Particular focus is being given to initiatives most likely to improve delay per incident. The route will also continue to work closely with the train operators to identify further areas of operator focus to improve overall train performance. Rolling stock will be a key focus area for the remainder of CP5 into CP6, including improving the reliability of existing rolling stock, and risk mitigation around the significant change to rolling stock. Significant timetable changes will occur towards the end of CP5 and into CP6, and the route will dedicate resources to analysing the potential impact of those changes.

5.3.2 Route operations strategy

Within CP5 the number of service affecting incidents has reduced slowly but their impact has increased marginally. To meet the increase in services during CP6 whilst also reducing the impact of future incidents, an enhancement to our present operational response capability is proposed.

Within CP5 the route has led the pilot implementation of digital technology for signalling, with the planned delivery of an Integrated Traffic Management (TM) system for the Essex Thameside route before the end of CP5. This project involves significant business change activities and the transfer of operations for Essex Thameside to the Romford ROC. It is currently estimated that the rollout of an integrated TM solution on Thameside could reduce DPI by 6% and, when fully interfaced with c2c's stock and crew systems, up to a 12% reduction.

The key operational problem statement for Anglia operations in CP6 is to improve performance whilst delivering additional capacity. The opening of the Elizabeth Line and significant other timetable changes, most notably across the Greater Anglia franchise area will provide significant additional capacity but will import significant additional performance risk. Operating to right-time will become a key focus area for Anglia in CP6, as well as continuing to work closely across the industry to maximise effectiveness and consistently continue to work as a safe and high performing team.

The key recommendation of the Digital Railway SOBC is that further benefits could be realised from a wider implementation of an integrated TM system across selective parts of the route. These benefits would include:

- Better conflict resolution
- More efficient access for maintenance
- More robust planning of possessions
- Increased efficiency within possession access times
- Faster communication forming an integral part of improving the passenger journey experience.

The expected increase in traffic volumes will become a significant constraint during CP6. A fully integrated TM system would enable a Connected Driver Advisory System (CDAS) to be utilised, identifying and maximising capacity opportunities on the key pinch points of the route, avoiding the need for additional significant physical infrastructure works.

With an increased level of enhancement funding, in addition to the base funding, the opportunities exist to implement a fully integrated TM system which could control up to 70% of the rail traffic movements on the Anglia route by CP6 exit. By consolidating our major control points into fewer locations and modernising the way we manage train movements on the network, we would create a higher performing railway, reduce delay and increase capacity on an ever busier network.

Through its base plan, the Anglia route is committed to improving safety through adopting and pioneering best practice from across the railway industry.

There is an assumption within the requested funding that headcount will remain relatively static other than the impact of a small headcount reduction following the delivery of the Norwich Yarmouth Lowestoft resignalling project by the end of CP5. Two identified risks are:

- The implementation of a new fatigue management standard at the end of CP5, which could significantly alter the existing roster patterns.
- Recent ruling on holiday pay which could result in additional premium payments during periods of annual leave.

5.3.3 Approach to resilience

The consolidation of control and signalling into larger centres with digital enabled technology, will present a bigger challenge in terms of single points of failure. Digital solutions will go some way to mitigating the risk by, for example, providing data backups. However, as a route we will consider passive provision across our strategic signalling/control locations and the ability to re-control dynamically.

Following the lessons learned activity from the 2015 potential strike activity, we continue to update and review our strike contingency planning local management competencies including signalling, response and ECROs.

5.4 **Output risk summary**

5.4.1 Risk

The risk assessments below have been developed through aggregating risk rankings in each of the objective areas as outlined in Section 4. In each of the risk matrices, N describes the current level of risk, and T describes the forecasted level of risk at the end of CP6 based on this plan.

Safety



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Likelihood

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Summary of risk outcome

This delivery plan is forecasted to deliver an improvement in safety performance and therefore also safety risk. The work has been prioritised in accordance of criticality which also considers safety risk and compliance to policy will be at least maintained at current levels.

To further mitigate against safety risks, the safety culture change programme will be continued to be developed and delivered for CP6 which particularly addresses workforce accidents.

Funding has been identified which would further mitigate safety risks around level crossings by providing additional mitigations and closure of further level crossings.

Summary of risk outcome

There have been a number of challenges to the delivery of the efficiencies during the first half of CP5. The packaging of renewals and the contracting strategy has not delivered the benefits expected. To address this, Anglia is implementing an enhanced focus on the rollout of continuous improvement techniques and is planning early contractor involvement with CP6.

The Anglia delivery strategy for CP6 has built on the lessons learned so far in CP5. To improve on the rates used for renewals volumes - particularly in signalling and track - the work bank costings have been reviewed against the cost of delivering work in CP5 plus relevant efficiencies identified.

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Performance

Political/ Reputation



Summary of risk outcome

This delivery plan forecasts a small improvement in asset reliability. The work has been prioritised according to criticality, which also considers that performance risk and compliance to policy will be at least maintained at current levels.

Significant risks to performance towards the end of CP5 and into CP6 will be the largescale introduction of new fleet and new timetables across all operators. The impact of the introduction of new fleet on the asset infrastructure has been assumed to have no effect, but the introduction of new timetables will give a risk to a rise in delay per incident with recovery from disruption and undertaking necessary maintenance being more challenging. The route will therefore look to mitigate this through continuous improvement and working closely with the operators to agree contingency plans ahead of timetable or fleet changes.

Summary of risk outcome

Anglia has worked to engage stakeholders during the development of this delivery plan to gain an input into the renewals access availability during CP6. However, as performance is forecast to remain challenging, and with the franchise and concession performance commitments being high, with the current funding the route is not able to support these franchise and concession trajectories.

The delivery of renewals on-time with no overruns is also critical to prevent reputational damage to Network Rail and the Anglia route. Therefore projects will continue to be monitored closely and lessons learned tracked from previous renewals works.

The volume of work is forecast to increase, and therefore contact with the public is also expected to increase. However, the route is forecasting that railway complaints will decrease owing to an effort to undertake more pre-notification and improve the culture of staff working at the sites.

5.4.2 Long run forecast

The graph below describes the long term expenditure forecast to control period 12, assuming expenditure levels for CP6 are consistent with the levels outlined in this plan. Beyond the end of CP6, the assumed level of investment is one which retains the condition and performance of the asset at CP6 levels.

The spike in CP8 is as a result of the large volume of signalling assets requiring renewal on the Great Eastern Mainline in CP8.

Individual asset condition and output long term trajectories for this long term level of spend can be found in Appendix F.



6. Customer focus & capacity strategy

6.1 Capacity & timetabling

There is significant timetable change within the first years of CP6 and Anglia has been working closely with the System Operator function to establish Event Steering Groups. These are convened to enable the smooth transition for the proposed timetable changes and include affected operators and other stakeholders. They identify and co-ordinate the challenges and potential for future timetable changes, which can be as a result of the completion of infrastructure enhancements, the introduction of new rolling stock or changes driven through franchise change. The two most significant changes on the Anglia route are:

- 1. The opening of through services on the Elizabeth Line to Paddington in May 2019, with full opening in December 2019. The 'concept Elizabeth Line train plan' has been subject to analysis through a Crossrail Railway Systems Model.
- 2. Planned changes to the Greater Anglia timetable which will increase peak hour seats into Liverpool Street by 55% by 2020. The new timetable will require supporting depot and stabling works, train lengthening works, a package of gauging works, and power and level crossing assessments. Greater Anglia timetable changes will be subject to further modelling analysis before introduction.

Nationally, the System Operator function will develop a programme plan for Event Steering Groups providing visibility of plans to lead the industry in preparing for major timetable change events. These are reported through a Calendar of Events.

Maintaining performance levels with this quantum of change across multiple operators is challenging and has been identified as a significant risk. As performance mitigation, new Greater Anglia trains will retain the old sectional running times on most services until December 2019 as illustrated in the diagram on the right.

Network Rail has a long term vision is to produce a 'zero defect timetable'. There is a clear strategy throughout CP6 to gravitate towards achieving

this, which includes investment in the technology portfolio. Further details of this are included in the System Operator Strategic Business Plan.



Timeline for the Greater Anglia timetable and fleet changes

6.2 Future capacity & growth

The Anglia Route Study published in March 2016, forecasts growth in rail demand over the next 10-30 years and provides options to increase capacity to meet this growth. This study also provides choices for funders with a focus on the next eight years.

	Increase in the am peak passenger demand into London Termini (or at the busiest point on the route) from 2013		
Corridor	Until 2023	Until 2043	
Great Eastern Norwich and Outer suburban services	32%	75%	
Great Eastern Inner suburban and Crossrail services	52%	83%	
West Anglia Main Line – all services	18%	39%	
North London Line / West London Line	22%	55%	
Gospel Oak to Barking	20%	46%	
Essex Thameside	13%	46%	



Graph from the March 2016 Anglia route study showing the forecasted growth in freight conditional outputs – freight growth per commodity

The Route study analysis was undertaken before the award of the Greater Anglia franchise. The franchise change provides longer and higher density rolling stock. As part of the Digital Railway SOBC, the demand data and proposed intervention strategy was reviewed. The key impact was to reinforce the need for capacity relief works at stations and to improve the business case for performance management investment such as the introduction of Traffic Management technologies in CP6.

On the Essex Thameside corridor, the 2016 route study forecast growth can be accommodated through train lengthening to 12 cars after infrastructure upgrades in CP4. The emerging challenge for this corridor given new forecast housing growth is to provide additional capacity to without a further decline in train performance. The first national rollout of an Integrated Traffic management system for the Thameside corridor is currently programmed for delivery at the end of CP5. C2C have aspirations to provide this additional capacity through deployment of ERTMS technologies.

A key CP6 investment priority will be to obtain funding support for all of the GEML Capacity Improvement Programme. This comprises the doubling of

Trowse Swing Bridge, doubling of Haughley Junction, a dynamic passing loop north of Witham, power supply requirements and level crossings, as well as additional platforms at Liverpool Street. As neither the GEML programme or Liverpool Street works are well developed or funded they are not included in the scorecard outputs within this document, although the route would request their funding in future.

The cross-country corridor, from Felixstowe to Ipswich, Ely, Peterborough and beyond, is key for both passenger and freight services, with enhancements priorities in the Ely area, Ely to Soham and at Haughley Junction. These are captured under the Felixstowe to the Midlands and North (F2N) work-stream – the route scorecard does not reflect the inclusion of this item as it is as yet unconfirmed as a project. The deferred Ely North Junction scheme will be incorporated into a more comprehensive Ely Area Capacity Enhancements scheme, for which Third party development funding has been obtained. This is a Hendy roll-over project which was included within the enhancements costs (section 5.1).

Further development of Crossrail 2 on the West Anglia Mainline (WAML) is key over the next eight years, to help meet and unlock further growth in the Lea Valley area.

These significant demands on the increasing capacity required to meet forecasted growth across the Anglia route gives rise to a number of significant performance risks that the route will need to manage and mitigate against alongside the Anglia route customers.

6.3 Digital Railway

Working closely with the Digital Railway teams, a SOBC has been prepared for a series of digital railway technologies to provide additional performance resilience and capacity improvements focussed on the GEML. The route has requested £221m which can be seen in the digital railway table in Section 5.1. This is currently unfunded.

The case to roll out traffic management across these routes is strong, with a BCR of 3.3. The funding to undertake Traffic management in CP6 and to prepare for ETCS in CP7 forms part of the additional Digital Railway funding request contained within this document which aligns to the submitted SOBC. Traffic management benefits have been included in the 'better than target' train performance trajectory from the last year of CP6.



The map shows the areas that are covered within the CP6 scope.

Map showing the areas covered within the CP6 scope of the Digital Railway SOBC

6.4 Communications

The Anglia route communications objectives support the route purpose and help deliver the vision. Our objectives are as follows:

- Showcase the outcomes of the CP5 'Railway Upgrade Plan' and grow stakeholders' understanding of the investment being made in the route in CP6 and challenges associated with it for Anglia.
- Instil a belief that we care about our impact on passengers and communities, and about our stewardship of public money.
- Create an environment which helps improve safety and performance of the route, driving behavioural change to deliver the scorecard targets.
- Promote Network Rail leadership in our region and showcase our transformation and collaboration with TOCs/FOCs.

These will be met with a communication strategy:

- Loud and proud on railway improvements and its benefits.
- Involve, recognise and listen to our people.
- Be caring, talk caring. Demonstrate Anglia cares about the impact on passengers, communities and about our stewardship of public money.
- Storytelling Network Rail devolution and transformation, leading the way in bringing together track and train and build trust.
- Stronger collaboration on communications across the rail industry and partner organisations.

The communication strategy will be delivered with the following activities:

- Promote safer behaviours of our workforce, public and passengers.
- Drive and sustain proactive engagement and publicity for key projects: Anglia will tell the positive story of the Railway Upgrade Plan, how Anglia is enabling a greater number of passengers to travel more quickly and easily with increased services, and CP6 investment in Anglia.
- Passenger communication: work in partnership with train operators at times of planned and unplanned disruption to manage demand and communicate the benefits of the Railway Upgrade Plan and show Anglia cares.
- Active engagement and consultation with local communities: listen and show Anglia cares about them, and to enable work to happen without hindrance or delay.
- Help create a positive climate to generate third party investment: Support the Anglia effort to become more commercial focusing on the transformation journey.
- Engage Employees: Continue to evolve the internal communications programme of deep engagement with employees across the route, such as 'You said, we did' campaigns to help people reach their potential and deliver their targets and objectives.
- Build reputation to become an 'employer of choice' reinforcing key initiatives including D&I, STEM, Apprenticeships and Graduate schemes.
- Manage Anglia reputation: Proactively engage with media, political and public enquiries around planned and unplanned disruption.

6.5 Property

Network Rail's Anglia route and Property teams work collaboratively to agree strategic property and town planning advice, and associated property acquisitions and transactions. This is to support the delivery of operational, maintenance, renewals and enhancements on the Anglia route with support and emphasis currently being placed on:

- Anglia Level Crossing Closure Transport & Works Act Order
- Felixstowe Doubling
- Soham to Ely Re-Doubling
- Gospel Oak to Barking
- Greater Anglia Platform Extensions
- West Anglia Mainline Programme

Continued focus will be on engaging planning projects at an early stage to enable the joint planning of project delivery via Transport Work Act Orders or Development Consent Orders where appropriate.

6.5.1 Land Strategies

Anglia will also look to develop detailed land strategies to help inform the optimum use of land, realise additional benefits, such as better operational facilities where that may release development land, and leverage third party investment. Through working jointly with the System Operator, Property, and Sponsor teams, the route will continue to build on its good record to attract inward investment to the business (such as through S.106 contributions).

For example, a master plan is underway for Liverpool Street station in conjunction with British Land who owns land on all three sides of the station and therefore has a special interest. The master plan will seek to address the major improvements that have been identified to meet forecast demand at the station.

6.5.2 Disposals and Income Generation

Network Rail Property will help to fund Network Rail's Railway Upgrade Plan by selling assets not core to Network Rail operations and seeking to release surplus railway land for housing to achieve government targets e.g. Acton Central, Bury St Edmonds and Bishops Stortford in CP5. All sites that are being considered for disposal will be assessed to ensure operational uses can be protected, and where possible, enhanced. Land disposals are also underway where it presents a liability to the Network Rail (for example Kings Lynn branch line and Wherstead Road, Ipswich) to reduce costs.

Anglia is also looking to work more collaboratively with FOCs and TOCs to identify joint development and disposals which benefit the industry through reduced costs or enhancing passengers experience. For example, a pilot project is being undertaken in collaboration with c2c to look at development above the station car parks at Upminster and Leigh-on-Sea.

7. Cost competiveness & delivery strategy

7.1 Summary route deliverability statement

Key lessons learned on the deliverability of works within CP5 have been the need to have an early understanding of the volume of work that can be delivered within the available access, and the need to integrate the work from different delivery organisations in order to maximise the access opportunities available. This has resulted in the 'Controlling Mind' principle and the creation of the route's Integrated Access Planning team (IAP). In developing the CP6 plan the route has continued with this 'Controlling Mind' principle and has used the renewals workbanks to identify access requirements early.



The IAP team has developed a set of working assumptions which identify the access required for different work types and, in conjunction with train operators, has established a set of planning rules and agreements which define what disruptive access is normally acceptable. The IAP team has been able to develop an initial CP6 possession plan that:

- Maximises the volume of work delivered within the possessions.
- Ensures that different work types are compatible.
- Establishes outline haulage requirements including the availability of routes to and from site.

- Identifies the requirements for key resources.
- Understands alignment to rules and agreements for disruptive access availability.

These plans are being developed with the support of the route Planning Team, TOCs and FOCs, and have been shared with other stakeholders as part of the early consultation process. Operators are also involved to explore options for different methods of working, including potential blockades.

From this, a detailed week by week plan across CP6 has been developed identifying suitable access periods for each piece of renewals work due to be undertaken on the route. This has enabled the route to further visualise the work and ensure that critical resource, access alignment and assumptions have been validated.

This work has been summarised into a CP6 'Strategic Engineering Access Statement' which is currently in production and will have senior level support from the TOCs and FOCs. This will provide a high level of confidence in the deliverability of the plan prior to formal Engineering Access negotiation taking place.

The assessment of supply chain capacity, and balancing between renewals and enhancements, is challenging at a route level. However, completion of the Elizabeth Line and Thameslink within CP5 should mean that capacity is available. Demand on the supply chain may be affected by any potential reduction in CP6 renewals and enhancements expenditure if these activities are not funded.

For the deliverability of maintenance, the activity based planning tool has been used to build a bottom up plan establishing head count requirements as well as cost. There will also be an in-depth review of the current maintenance end-to-end planning process before the end of CP5 which will look to deliver improvements in the way that maintenance work is planned and delivered going into CP6. In addition, Anglia plans to expand the 'Controlling Mind' principle into maintenance possession planning going forward.

7.2 Access strategy

During CP6, there are several areas of focus for Anglia routes' access requirements driven by a combination of Renewal, Maintenance, Enhancement and Third/Other Party works. There continues to be a focus on the Great Eastern Main Line (GEML), with significant work also planned on the West Anglia Main Line (WAML), Thameside route, and the East Suffolk Line. The route will continue to negotiate access with the various Operators affected in an open and transparent way to comply with the Network Code, supported by a combination of quarterly stakeholder meetings and ad-hoc area- or work-specific meetings. The Head of Route Planning Team, supported by the IAP team, is key to this process to optimise access requirements between the different delivery organisations.

For CP6 the delivery plan will require a significant volume of disruptive access in locations which have already endured significant disruption during CP5. In such instances the approach will be as follows:

- 1. Early GRIP stage work to be commenced in CP5.
- 2. A continuation of the 'Controlling Mind' principle.
- 3. Obtain early agreements on access with TOCs and FOCs.
- 4. Creating multi-disciplinary access strategies in key locations which will allow working time to be maximised while reducing the overheads associated with multiple possessions.
- 5. Ensure that as many possessions as possible are multi-discipline.

There will also be an increased use of blockades where there is stakeholder support for this approach.

7.3 Maintenance delivery

The route maintenance strategy for CP6 and beyond takes a robust, bottom-up approach to understand core requirements in respect of meeting customers' needs and asset performance KPIs. This accounts for renewals volumes delivery during CP5 and the full renewals workbank for CP6, as well as passenger and freight service level changes and tonnage impact.

The strategy incorporates a number of factors including:

- The continued **application of Lean** tools and methodology throughout the maintenance organisation. A number of staff have already attended training, with 50% of staff to be Lean trained by 2019 and benefits in safety, productivity, and performance to be leveraged across CP6.
- Delivery of **Plain Line Pattern Recognition** (PLPR) and the associated reduction in the requirement for manual visual track asset inspections, with some benefit in the final year of CP5 and full benefits through CP6, including Risk Based approaches to delivering routine maintenance, with resources redeployed across the route to maximise productivity.
- Eddy current technology providing train borne Rolling Contact Fatigue detection allowing significantly improved track asset knowledge than previously available and replacing the requirements for manual visual inspection. The benefits of this project are expected in year 1 of CP6, initially in a reduction of contractor resources requirement, followed by the potential to reorganise the ultrasonics department within each delivery unit.
- Once the **automated corporate rostering** tool is linked to payroll, the route anticipates delivery of efficiencies in CP6 based on maximising rosters to terms and conditions, and reduced administration in completing manual time sheets.
- The **contracting mechanism** for Buildings and Civils maintenance and Civil Examination Framework Agreement (CEFA) works will be reviewed for CP6 with the aim of delivering greater productivity and efficiency. The route will also take a view as to whether efficiency can be generated by taking some of these services in house.
- The use of **Intelligent Infrastructure** tools to create a 'predict and prevent' approach to maintenance is essential to delivering a high performing railway. Adoption of the range of such tools currently available is already advanced on Anglia, and this strength will continue to be built on into CP6 through the Intelligent Infrastructure programme. The existing Intelligent Infrastructure equipment will be extended to cover a higher proportion of the key equipment in use enabling more real-time monitoring from the Romford Route Operating Centre preventing failures from affecting the train service.

With a strong focus on the reduction of DPI, a key principle in reviewing the maintenance strategy on the Anglia route is having the right teams in

the right place and available at the right time, taking account of how all of the activities listed above allow for re-deployment and more efficient resource utilisation. The maintenance organisation will help to reduce the volume and impact of incidents through better use of technology and tools to predict and prevent asset failure, as well as undertaking as much work as possible through fixed access windows.

The competence and capability of maintenance staff is a key driver of both quality of work and the safety and performance of the infrastructure assets. Anglia recognises this fact and will include in the CP6 plan the requirement to improve both the skill level of the staff, by training and professional development, and the capability, by cultural training to create a professional and empowered workforce. Licencing schemes, for example the Institution of Railway Signal Engineers Licencing Scheme, will be used where required, and where such schemes do not exist Anglia will create a framework of skills development so that the development of staff is known and managed.

7.4 Project delivery

7.4.1 Works Delivery

Small refurbishments, reactive and emerging works and renewals with limited design and development requirements are delivered by the Anglia Works Delivery organisation. They have a project management team and are a direct labour workforce and source of expertise for Track, Signalling and OLE activities. They are also supported by small pool of framework suppliers for other activities, where fast engagement is enabled for works up to £100K; works over this level are normally tendered. Where necessary the workforce can also support maintenance delivery.

However, the capability and efficiency of this organisation is currently limited by fixed rostering principles. As a result, the route is conducting a Works Delivery review to identify how the organisation will be shaped. This will ensure it provides the most efficient delivery for the portfolio of works that Works Delivery will undertake in CP6, as well as complementing the maintenance activities. The principles of future operation will be: flexible, responsive, financially self-sustaining, efficient, productive and to contribute positively to the performance plan.

7.4.2 Hansford Review

The Hansford Review was commissioned by Network Rail to identify the barriers that stop third parties building and investing on the rail network. The report proposed contestable delivery of renewals and enhancement activities. The key recommendations were:

- Make it easier to work with Network Rail Anglia route is the trial for the introduction of a new Head of Asset Protection role.
- Encourage the industry to challenge Network Rail standards Anglia has made good progress with the supply chain in the delivery of its CP5 structures workbank.
- Build the capacity and capability of the route teams a Head of Business Development Role has been created in Anglia.
- Oversee contestability effectiveness Anglia has created a future pipeline of projects which could be subject to progressing through delivery models.

Sizewell C Construction traffic project has been put forward as a potential candidate to be delivered outside of Network Rail's projects function with the route ASPRO team providing asset protection activities where required.

7.4.3 Infrastructure Projects (IP)

IP is the delivery route (as stated by the Network Rail "Clienting Principles") for higher risk, significant renewals and enhancements projects.

IP will deliver a contracting strategy appropriate for the proposed workbanks to facilitate efficient delivery of these workbanks.

7.5 Supply chain

Anglia route has a well-established supply chain for all workbank items and understands the supply chain contractual landscape. However, it is recognised that there are further opportunities for increased efficiencies and assurances in the next control period through improvements in supply chain management. For CP6 we will continue to provide the capability and capacity to deliver a more complex workbank and to focus on key business requirements. There are a number of enabling components which are key in delivering the strategy in CP6 which include ensuring that the route:

- Secures the necessary level of skilled resources.
- Aligns the supply chain to enable continuous improvement in safety culture and performance.
- Integrates the supply chain for efficient delivery.
- Aligns the supply chain targets with the Anglia business plan.
- Manages governance, authority and risk through the Anglia Route Panels.

Anglia has delivery partner specific supply chain strategies with Infrastructure Projects (IP), Works Delivery (WD) and Route Services (RS).

7.5.1 Infrastructure Projects

The proposal is to build on the IP CP5 strategy in terms of reducing the number of contractors engaged to deliver the workbank and support Network Rail's objective to drive business improvement through collaborative engagement with the supply chain. Anglia will lead the discussion with IP to establish a contracting strategy that not only delivers the desired outputs but also builds a robust and sustainable supply base in the Anglia area. The work activity will be contracted in packages of compatible works, around a pre-agreed access strategy. It is proposed that a large percentage (at least 50%) of the workbank will be instructed prior to the start of the control period giving the contractor certainty of the core workload to enable the team resource to be built. The remainder of the workbank (the certainty of funding only comes with the final determination) will provide the incentive for efficient delivery and the desire for work continuity.

7.5.2 Works Delivery (WD)

The CP6 supply chain strategy for WD in Anglia also acknowledges the benefits of competition in driving efficiency. This particular strategy will be applicable to low-medium value jobs, low complexity and low risk. A full works delivery review as described in section 7.4.1 is underway within the route to determine how best to maximise delivery of these work items.

7.5.3 Route Services

Through route services, around £75m of new or replacement contracts are tendered for Anglia route each year across a wide range of works, goods and services, with a target saving of 5%. A key part of each contract

strategy is to increase the level of safety engagement and performance with each supplier, as well as ensure the supply chain is embracing Network Rail's Better Every Day culture by, for example, introducing Total Productive Maintenance into their approach to reliability.

For CP6, both Route Services and Route Contracts and Procurement team will continue to focus on key themes in the supply chain, such as levels of sustainability, applying the principles of the Modern Slavery Act, improving Diversity & Inclusion and supporting the Government's Growth Agenda. The final 18 months of CP5 will see the Route Services Contracts & Procurement team, in partnership with the Anglia route, reintroduce four key strategies to improve the value from the supply chain:

- Integrated category management
- Supplier account management and engagement
- Customer account management
- Better Every Day systems, processes and behaviour (including postcontract and supplier performance management).

Examples of where Route Services Supply Chain Operations is working with the route is in:

- Responding to the increased demand for both plain line and S&C stoneblowing due to proven track geometry outputs & the associated durability of the improvement – this allows life extension of the track rather than renewal.
- Increasing grinding volumes as it provides the most economic method for maintaining and remediating rail at the earlier stages of RCF (rolling contact fatigue) propagation. The introduction of rail milling capability will treat heavy and severe RCF which unless treated would require a significant programme of re-railing.
- Continuing to provide a reliable supply of seasonal treatment programme through the specialist rail vehicles to make the Anglia infrastructure resilient to the impact of the weather conditions.
- Tender evaluation for the new tamper and ballast regulating contracts to align fleet capability with route requirements.
- Continuing to use the High Output machinery for Track capex work within CP6.

7.6 Costing approach

Asset	Supplier of cost Data	Basis of cost	% of asset covered
Track	IP Track Works Delivery	Historic delivered rates and some first principles estimates	100%
Signalling	IP Signalling	Historic delivered rates and some first principles estimate	100%
Electrification & Plant	IP Anglia	Historic delivered rates and some first principles estimate	100%
Buildings	IP Anglia	Historic delivered rates	100%
Structures	IP Anglia	Historic delivered rates	100%
Earthworks	IP Anglia	Historic delivered rates	100%
Drainage	STED	Historic delivered rates	100%

The table above summarises how the Anglia CAPEX plan has been costed. For each discipline, more specific information is as follows:

- Track: Project estimates are based on locally derived unit rates provided by IP Track.
- Signalling: The workbank has been priced using the ICM (Infrastructure Cost Model) tool, using the SEU rate provided by IP signalling, and adjusted for local factors to arrive at an estimate for each project. Additionally a GRIP 3 project estimate was available for a re-signalling scheme deferred from CP5.
- E&P: The estimates of the OLE work have been based on a current project which is delivering similar work. For other parts of E&P the estimates are a mix of historic delivered rates and a small number of project estimates.
- Structures, Earthworks, and Buildings: The workbanks have all been priced using locally derived rates supported by the IP Anglia delivery team.
- Drainage: The workbank has been priced using national rates provided by STED.

A cost model has been developed which uses actual cost data from the first three years of CP5. It has been used to estimate the cost of the delivering the CP6 workbank to provide a baseline cost based on CP5 delivery strategies and behaviours. This method avoids any inbuilt optimism on unit rates or expectation of future efficiencies. Comparison of the CP6 modelled costs and the unit rate estimates show that the submitted unit rates are lower. This demonstrates that the unit rates have a level of 'optimism' but these have been aligned and articulated through the Anglia efficiencies plan.

7.7 Headwinds and efficiency

The charts and tables below show how the post-headwind, post-efficient forecast has been generated. It also shows the activity and scope drivers which have driven the change in workbank and activity volume between CP5 and CP6.



This graph summarises how the post-headwind, post-efficient CP6 costs have been derived from a CP5 start position.

		Year				Year			
Totex (O,M,R)	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	CP6 total
Pre-efficient plan ⁴ (£m)	373	359	358	468	572	550	610	473	2673
Activity/scope efficiencies (%)	0.0%	0.0%	0.0%	-5.6%	-4.5%	-4.7%	-4.3%	-5.6%	-4.9%
Core plan (£m)	373	359	358	443	547	526	585	448	2548
Head winds (%)	0.8%	1.0%	3.6%	2.0%	2.4%	1.9%	1.6%	1.7%	1.9%
Efficiency (%)	-3.4%	-4.9%	-5.6%	-5.4%	-7.5%	-9.1%	-10.4%	-8.9%	-8.4%
Tailwinds (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Inefficiency (%)	0.0%	0.8%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Post-HW, post-Eff spend (£m)	363	348	351	428	520	488	534	416	2386

The table below summarises the pre-efficient plan costs, and then details how the post-headwind post-efficient spend has been derived.

⁴ Note that pre-efficient plan is equivalent to core CP6 plan + 2a (activity/scope efficiencies) in the waterfall

Route cost headwinds and efficiency by theme

Theme	Area	Description – Summary of key items	Net % change
Access (3)	Efficiency (3a)	Access optimisation through multidisciplinary renewals and improved planning. Less access required through mid-life refurbishment of OLE rather than full rewire.	
	Tailwind (3b)		-0.9%
	Inefficiency (3c)		
	Headwind (3d)	Reduced access and shorter blockades accepted by operators for works.	
Workbank planning (4)	Efficiency (4a)	Improved specification of works to reduce non-volume activity and early development of works.	
	Tailwind (4b)		0.6%
	Inefficiency (4c)		-0.0%
	Headwind (4d)		
Technology (5)	Efficiency (5a)	Use of skeletal stressing combined with induction/flash-butt welding in track. Increased implementation of Intelligent Infrastructure techniques in the delivery of maintenance. Modular assets and plug-and-play equipment for signalling.	
	Tailwind (5b)		-1.2%
	Inefficiency (5c)		
	Headwind (5d)		
Delivery (6)	Efficiency (6a)	Norwich-Yarmouth-Lowestoft Resignalling Scheme. Restructure of the Direct and Indirect organisation. Simpler delivery of mid-life refurb of OLE on Thameside route.	
	Tailwind (6b)		-2.0%
	Inefficiency (6c)		
	Headwind (6d)	Increased complexity of delivering for E&P and Track.	
Design (7)	Efficiency (7a)	Less complex design requirement for OLE as mid-life refurb. Use of signalling and track technology innovation.	
	Tailwind (7b)		4 50/
	Inefficiency (7c)		-1.5%
	Headwind (7d)		
Commercial (8)	Efficiency (8a)	Collaborative contracting strategy with early engagement with the delivery agent. Retendering at lower unit rates. Packaging of works together.	
	Tailwind (8b)		4.494
	Inefficiency (8c)	Removal of toilet charges at major stations	-1.1%
	Headwind (8d)	Increased contract rates driven by market pressures. Historic price impact giving a difference between current and CP5	
Othor (0)	Efficiency (0c)		
Other (a)	Eniciency (9a)		
			0.8%
		Enhanced ecounity provision of stations. Allowance for the normant of eventime during holidoy for direct staff. Allowance for	0.070
	rieauwina (9a)	payment of government apprenticeship levy.	

7.8 Financial certainty analysis

This section provides an explanation of the how the overall plan has been built and sets out the estimate of the degree of financial uncertainty within this plan.

Pre-efficient costs in this plan are based on 'current rates' but include any additional scope needed to deliver the outputs in the plan. 2016/17 unit rates have been used to develop capital expenditure forecasts and CP5 exit rates for support, operations and maintenance expenditure forecasts. Drivers of rate increases (headwinds/inefficiencies), or rate reductions (efficiencies/tailwinds), where there is a reasonable expectation they will occur, have been identified separately from the core CP6 plan.

The combination of our core CP6 plan, headwinds/tailwinds and efficiencies/inefficiencies is the 'submission' and represents the 'most likely outcome' for CP6. The content of this plan reflects the funding that is understood to be available in CP6. The Anglia route considers this plan to be realistic and, therefore, deliverable in CP6.

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

The main drivers of uncertainty in the plan are identified in the table below.

Uncertainty ranges for CP6

The information in the table, presents Anglia's estimate of the overall range of uncertainty across the expenditure and income for CP6. The main drivers of the uncertainty ranges have also been identified. It is based on the detailed inputs provided in the Anglia OPEX, renewals and income submissions, and includes £221m for Digital Railway (currently unfunded). Headwinds/tailwinds and efficiencies/inefficiencies are included in the spot estimates.

		Summary of key drivers of the uncertainty range						
O, S, Income)	Potential range (low – spot – high)	Driver of range	Proportion of range					
Renewals	Low Spot High (-£257m) (£1,442m) (+£313m)	 Track – relatively slim rate range based on stable historic out-turn, but Track makes up a high proportion of the total renewals workbank Electrification & Fixed Plant (E&FP) – mid-life overhead line equipment refurbishment is a new type of work and makes up a large proportion of the E&FP workbank Digital Railway - the schemes are at an early stage of development and involve new technology Signalling - makes up a much larger proportion of the renewals workbank than in CP5, and the schemes are at an early stage of development Building & Civils – potential for site-specific complexities increases the rate range 	 15% 9% 23% 25% 28% 					
Maintenance	Low Spot High (-£32m) (£646m) (+£35m)	 Uncertainty around maintenance spend is narrower than renewals due to the high fixed costs of the business The main risk to the plan is slippage to the efficiency programmes Opportunities exist to deliver the efficiencies earlier, or to cover some of the additional work within the current establishment 	52%48%					
Operations & Support	Low Spot High (-£17m) (£298m) (+£10m)	 Uncertainty around operations and support spend is narrower than renewals due to the high fixed costs of the business The main risk to the plan is slippage to the Norwich-Yarmouth-Lowestoft and Clacton resignalling projects Opportunities exist to realise efficiencies from these schemes earlier 	38%62%					
Total expenditure	Low Spot High (-£306m) (£2,386m) (+£358m)							
Income	Low Spot High (+£55m) (-£244m) (-£43m)	 Traffic forecasts have been modelled around low, medium and high growth scenarios Uncertainly around schedule 4 as access plan is still in progress for later years in CP6, and may be impacted by the uncertainty in the renewals plan noted above Uncertainty around schedule 4 outflow if additional Enhancement work is taken forward High degree of risk on schedule 8 as recalibration exercise needs to be finalised and PPM predictions for CP6 are below TOC aspirations 	 5% 75% 4% 16% 					

8. Culture strategy

8.1 Safety

The objective of our Safety Culture Change Programme is to move the route Safety Culture Maturity from level 1-2 (Emerging and Managing) through to level 3-4 (Involving and Co-Operating).

The model being used to measure this change is the Network Rail Safety Culture Maturity Matrix. Achieving the sustained change in behaviour to reach level 3-4 from Anglia's start point, will take between 5 to 7 years.

The programme to achieve this has 5 key elements:

- 1. Creating the environment through leadership: To drive senior leadership ownership and accountability to enable open, honest and appropriate challenge and trust across the route.
- 2. Bottom up engagement: To provide a learning culture and environment at all levels and to provide staff with a few key simple rules which also encourage the reporting of close calls.
- 3. Middle management engagement: To ensure feedback to any close calls raised, to consider what risks occur and to remind everyone that the right behaviours reinforce improved safety outcomes.
- 4. Systematic risk management: To provide ownership for the integrity of the safety system and to enable people to think about how they perceive risks and behave accordingly.
- 5. Continuous improvement: To encourage innovation and people to continuously challenge.

In creating a baseline for safety culture change, the starting point is risk. As Anglia people become more risk aware they become less risk tolerant. If they have a mechanism to report (through close calls) and feel able to do so without reprisal (through the fair culture process), they are then more likely to willingly comply. This takes Anglia to level 3 in culture maturity. From that point, involvement, innovation and learning can build to level 4.

To achieve a solid baseline and build safety culture, the Anglia Safety Culture Programme comprises 5 projects:

- 1. Safety Leadership: Creates the context for change to happen. Leadership by example and how to build trust through the route.
- 2. Risk Commentary: A tool to aid concentration and risk awareness.
- 3. Close Call: A focus on behavioural close calls and the closure rate.
- 4. Fair Culture: Process, principles and application.
- 5. Safety Conversations: Talking about risk and how to do things differently, how to challenge effectively and how to encourage innovation and ownership from the ground up.

Safety culture underpins all the activities across the route. The route will be applying the 'hierarchy of control' in the way risks are tackled, which means starting with physically removing the hazards, moving through to the lowest level which is protection of the worker with Personal Protective Equipment. Anglia will be applying this to known risk areas around human factors and the related operational risks. In addition, each safety area has a specific plan which are summarised below:

Workforce Safety Plan: This addresses the general aspects of workforce safety risk by working towards improvements in a risk area that manifests in accidents and potential events. These include train near miss and the use of new technology and ways of working (eg. Planning and Delivering Safe Work), lifesaving rules topics and accident trends.

Health & Wellbeing Plan: Network Rail Anglia is committed to improving working conditions and employee health and wellbeing. The plan drives improvements in key areas associated with occupational health including hand arm vibration, respiratory risks, fatigue and musculoskeletal related risks. Anglia will also be improving the wellbeing of the workforce via life choices, mental wellbeing, rest and resilience, and inclusivity support.

Passenger Safety: This is focussed on the business understanding and driving compliance in key risk areas associated with asset maintenance, addressing the risk associated with asset integrity and reducing events that contribute to the Precursor Indicator Model (PIM).

Public Safety: This strategy is to reduce risk within the funding available

and respond where our risks change. Anglia will continue to improve knowledge of the risks and mitigate via new approaches and technology. There are targeted plans for level crossings, route crime hotspots and suicide hotspots. The route will continue to engage with the public via targeted community activity and general community engagement associated with railway risks.

Compliance and Assurance: Anglia is driving a compliance culture across the business and providing assurance confirmation on key risk areas to allow focussed improvement activity in the important areas that affect our delivery of the vision.

Train and Freight Operating Companies: Anglia will develop the approach of working with TOC and FOC companies to fulfil Anglia's duty of cooperation in relation to Shared Learning, Workforce Safety, Station Safety, Operational Risks, Safety Critical Communications, Route Crime, Level Crossings, Seasonal Management, Community Engagement, Environmental Matters, Infrastructure Integrity and Rolling Stock Integrity.

8.2 Change

Change is key to Anglia delivering a more efficient and safe railway. Change management will be delivered in the route by cultural change, Lean embedment and supported by high quality, project and change management. In CP6 Anglia will be committed to ensuring that all change programmes undertaken both centrally and locally will have been through Managing Successful Programmes for Network Rail (MSP4NR) and have a clear benefit cost ratio. This will ensure that all effort is focussed in the correct place to bring efficiency and benefits to both the staff of Anglia and the customers who use the route.

In CP5 two major local Lean initiatives are commencing and these will run into CP6. The Change team will also be undertaking a review of the Works Delivery Organisation and a review of Tottenham Delivery Unit across its entirety of operation to therefore establish improvements.

The main objectives of the reviews will be to:

• Create a plan which clearly identifies current blockers and review how these can be resolved using Lean principles.

- Improve the take up of the basic Lean principles to help embed continuous improvement into business as usual within the mind-set of the management teams.
- Prove that the full underlying principles of Lean work within a Delivery Unit and in an operational railway environment.

It is envisaged that these reviews will deliver short term benefits and efficiencies that will be incorporated and delivered in flight, but also longer term improvements that will need detailed plans to implement. The reviews will provide lessons learned and shared best practice across the route.

In addition to these major Lean initiatives, the route is also focused on enabling small incremental improvements through the training. Anglia has reviewed the current position of training and uptake of Lean tools and the associated continuous improvement strategy. The priority for change during CP6 will be to deliver the process of continuous improvement which will be enabled by delivering a revised Lean programme in CP5.

The revised programme will change the course duration and structure to:

- Focus on embedding tools and experiments to enable change.
- Provide coaching support and ensure the techniques learned are turned into business as usual.
- Create a 'Shining Star' programme for people to become Lean practitioners and support each other.
- Link the training package to other courses being designed and run.

By making the tool usage routine through the initial coaching support, it will build an environment where people challenge how both they and others operate to enable small incremental improvements in how everyone works every day.

In addition, once people have attended the Lean course, 'experiments' will be encouraged and supported within the route. The use of direct experiments will help move towards a working environment where attempting business change becomes business as usual. The experiments will also focus on identifying and delivering a direct improvement or saving, therefore contributing to finding and delivering efficiencies on a continual basis.

The route is committed to continue to support the national projects through the rest of CP5 and into CP6 which include the following projects: PLPR, Eddy Current, ORBIS and the Homesafe Programme. In supporting these projects Anglia will ensure that there are the correct resources to manage the change, and more importantly to embed the change and deliver the benefits.

The Anglia route is reviewing the governance structure in line with the vision taking the route into CP6 and beyond. The governance framework for the route will align with the Periodic Business Review at both a national and local level. It will also enable clear line of sight between each level within the business so management information is successfully cascaded up, and decisions and actions successfully cascaded down.

A robust governance framework is required to ensure that it enables successful delivery of projects and activities to deliver the scorecard outputs. One of the focus areas will be the review and integration of change projects across the route such that any risk or issue areas can be resolved quickly to minimise any impact they will have on delivery of project benefits.

8.3 Organisational capability

Anglia aims to attract the best people through innovative, diverse and socially-inclusive resourcing, supported by strong people and skills requirements forecasting.

8.3.1 Recruiting the right people with the right capabilities

Having great people will be critical to delivering Anglia's CP6 plan. Whilst it is important to think about how the route develops and engages existing employees, it is also critical to have a strategy to recruit the right people, with the right skills to the route to ensure that capability requirements can be met in future. Anglia will therefore follow a four step process to understand current and future capability to drive the recruitment strategy:



Following this process will provide Anglia with a clear view of the capability that currently exists within the route and what will be required in future to

deliver the CP6 plan. Using that knowledge Anglia will be able to understand the skills and capabilities which need to be targeted within the recruitment strategy. In addition to this, it will also be crucial to ensure that the organisational structure is fit for purpose and in line with the organisational design principles within the route business to meet any cost efficiency challenges that may arise.

8.3.2 The right training to meet business needs and build winning teams

The key objective for CP6 is to introduce a higher level of control regarding the identification and agreement of requirements for skills training. This will be supported by a shift towards a Capability Management approach which will introduce more robust processes around the setting of training priorities and will also produce reliable information which allows route senior management to make better decisions about what training is needed to meet future capability requirements to address key operational challenges. Ahead of CP6 Anglia also intends to address key issues that are preventing the delivery of an optimal route training service including: reviewing training facilities, increasing the delivery of localised training, and creating bespoke training packages.

8.4 Social & environmental performance

The overall aim in CP6 will be to deliver an increase in management maturity, full and sustained compliance with agreed regulatory and legislative requirements, financial efficiencies, performance improvements, and a much enhanced reputation with the local communities and stakeholders. Over CP6 the route will work to the principles of ISO14001.

Anglia is looking to minimise environmental impacts and maximise environmental opportunities within the current funding framework. The key focus is around energy and waste management and maintaining legal compliance. Through CP5, the route is undertaking a programme of works to reduce the energy consumption of the route to work towards achieving a 11% reduction in non-traction CO_2 emissions by the start of CP6, by reviewing energy usage at operational locations. Through CP6, the route strategy will be to use Lean principles to target incremental improvements in reducing further the route energy consumption and therefore environmental impact. The route seeks to be a good neighbour to all communities Anglia runs through and into, and will work with local authorities to improve Anglia's presence in areas of social regeneration, community involvement and public behaviour around the railway.

8.5 Diversity & Inclusion (D&I)

The route is working hard to ensure the workforce better represents the customer base and society as a whole. Anglia's approach to diversity and inclusion will continually evolve throughout CP6 but will centre around two focus areas:

8.5.1 Attract and recruit from a diverse talent pool

To achieve this, Anglia will focus on promoting careers in rail across recruitment pool i.e. young people, under-privileged backgrounds and military personnel. It will also be important to develop long-term partnerships with industry, professional and education bodies to encourage applications from a diverse range of backgrounds.

Network Rail has also set a national target to reach 20 percent of females by 2020 which, in turn, will involve increasing the percentage of women employed by Anglia. This will require a more inclusive recruitment process with opportunities ranging from blind shortlisting to remove unconscious bias, reviewing how we attract, assess and develop our female talent; reviewing the composition of interview panels; bespoke development programmes; targeted recruitment; and enhanced retention strategies. Anglia will also develop a return to work programmes for women following maternity leave and career breaks.

8.5.2 Promote and raise awareness of D&I with all employees

With a focus on D&I within Anglia, the route can create a high-performing culture which recognises and respects the differences between people and values the contribution each person can make.

Through CP6 the route is looking to develop a mixed mentoring programme which aims to support those early on in their careers by connecting them with mentors who have a different perspective and background. This will encourage the breakdown of silos and encourage broader thinking. It will also be critical to educate line managers on the importance of D&I and how they can support a diverse and inclusive

environment within Anglia and help people be the best they can be. This will be achieved through the 'Everyone Programme'.

Finally, a D&I forum will also be established with stakeholders (i.e. TOCs and FOCs) to share best practice on D&I across the rail industry.

8.6 Quality

The continuous improvement programme helps to support the quality programme within the route. To deliver high quality performance and meet customers' expectations in the most cost effective way, the scope of the strategy is:

- To develop, implement and maintain an integrated management system.
- To develop, and embed a revised governance structure at all levels within the route.
- To drive QHSE performance and continued improvement using Lean principles.
- To manage risk through Business Critical Rules across the route.

The Lean strategy for the route, as detailed in section 8.2, will underpin continuous improvements across the route both at an individual and business level and therefore will drive small incremental improvements to quality of work delivered. The route will also be developing a 'Shining Star' programme to develop people with a high potential into being a Lean advocate so they can regularly coach and support people to embed Lean principles within their business area.

The revised route governance structure will provide line of sight between all levels within the route which will also enable the route to undertake assurance activities. This will ensure vision, plans and delivery of these plans, risk management, and reporting are of the same high quality level to drive delivery of the route scorecard.

The current RM3 assessments that the ORR undertakes to assess the current safety performance levels of the route will also occur at a route level.

The quality strategy will be further developed including determining how to work towards achieving certification on ISO8000 and ISO55001.

8.7 Information Technology (IT)

The Anglia route will continue to use the centrally provisioned IT department under Route Services for the supply of the IT infrastructure to Anglia and will align with the national IT strategies, such as the "Business Aligned IT strategy". The Route has no current aspirations to devolve IT services into the Route, and sees Network Rail Route Services as a trusted partner in this strategic area.

The demand for IT is forecast to be comparable to CP5 levels, but the route will look to review local policies and procedures around purchasing, usage and management of IT equipment. This will be with the aim of aligning technology, including mobile devices, to roles to ensure that people have the correct equipment for the role that they will undertake.

Document sharing and collaboration will be a key driver for IT in CP6. This will enable deeper alliances with Anglia customers. System and data integration can enable seamless third party access to use Network Rail systems where required. Personal conferencing tools will continue to evolve which will allow the route to become more productive by potentially reducing the need for staff to travel as frequently saving time and money.

Anglia and Route Services will also collaborate to understand how to extract, process and analyse the increased amount of data received from trackside and train-borne sources. With connected equipment comes the risk of data and cyber security. More commonly thought to relate to the office environments, cyber security is also a risk to track assets, digital information screens and operational equipment. Proactive measures will be undertaken to minimise any risk to disruption.

Real time operational data will be pivotal to improving performance within the route and further tools to enable this will be reviewed within CP6.

9. Strategy for commercial focus - Third Party cash funded contributions

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

9.1 Current and planned Third Party funding

To date the route has relied upon enhancements as part of its strategy to increase safety and performance resilience, and to provide additional capacity to meet growing demand. However, funding sources are increasingly moving away from central government towards Local Authorities, and strategic transport groups meaning there are lower levels of government funding available for rail enhancements. This shift will reinforce the requirement for beneficiaries of enhancements to pay for them rather than expect them as part of central government spending. In response, the route needs to take a more proactive approach to capturing funding from more dispersed sources and develop capability to bring in third party funding.

The Anglia route has a strong track record in obtaining Third Party funding across the last two control periods:

- In 2016/17 £100m of Third Party funding was secured by Anglia which accounted for 60% of the national total for the year.
- In CP5 an additional £60m was obtained to enhance the West Anglia Mainline Programme with an additional track extension and new station at Meridian Water. Funding has been obtained from 5 different funders and is subject to 11 commercial agreements. This is facilitating a wider £6bn of Enfield regeneration and the provision of 10,000 new homes and 6,700 new jobs.
- £9m of development funding was obtained to progress the Ely Area Capacity Programme, a Hendy programme from CP5. This should support the prioritisation and business case development for delivery funding within CP6.
- The route has also secured Third Party funding in principle through a strong Local Enterprise Partnership (LEP) relationship to close Grays

Level Crossing which has a significant safety risk, and align this closure with the development and delivery of an underpass facilitating a wider town regeneration.

Significant Third Party funding projects in active funding discussions are listed in the following table.

Unconfirmed Project	Current GRIP Status	Expectation of receiving Third Party Funding	Further comments
Liverpool Street Station Redevelopment	1	High	British Land identified as a possible development partner
Liverpool Street Platforms 16-18	3	High	RfL identified as a key funding partner
Waterbeach Station relocation	2	Medium	A relocated station would provide MOD land to be made available for housing development
Trowse Swingbridge	0	Medium	New Anglia LEP discussions commenced
March – Wisbech	2	High	Discussions ongoing with Cambridgeshire County Council
Soham station	2	High	Working with Cambridgeshire County Council
Cambridge South Station	0	Medium	Discussions ongoing with Laing Rail
Hythe Road and Old Oak Common stations	3	Medium	Close collaboration with RfL and development partners
Beaulieu Station	2	Medium	Close working relationship with Essex County Council to develop the total funding package
Sizewell construction	2	High	Initial development activity funded by EDF

These opportunities and other future schemes included within the Anglia route Third Party funding strategy total a potential pipeline of activities in excess of £1bn, which may attract third party contributions, from CP5-7, excluding Crossrail 2.

9.2 Capability & business development

9.2.1 Anglia's tactical plan to deliver Third Party funding

The Anglia route has developed a new strategy for increasing the level of Third Party funding to support future enhancement investment schemes. The diagram below shows how Anglia plans to further define the route funding plan in CP6.



9.2.2 Identification of key risks to achieving the strategy and plan

To ensure relationships are successful in the long-term, the route will need to demonstrate to third parties that it is an effective, efficient delivery vehicle which can respond quickly. To support this, the route is seeking to improve and refocus its local route based Asset Protection teams following the recommendation from the Hansford Review.

A key challenge to obtaining Third Party funding is the management of risk. Risk Assessment Tools have been developed to establish whether the route is in a position to manage and mitigate those risks or absorb the relevant liabilities. Key risks within Network Rail's control to delivering the strategy are:

- Further reduction in third party perception of Network Rail's ability to deliver to time and budget.
- Inability by Network Rail to deliver, develop, or asset protect the volume of third party aspirations without compromising existing commitments.
- Failure to change view that the beneficiary should pay for the enhancement rather than government.

The Network Rail delivery capabilities, the funding frameworks available and the message that the beneficiary pays for schemes, are being reinforced through relationship management, a communication strategy, and the publication of an investment pipeline in December 2017 to provide potential funders with visibility of future opportunities.

Key risks outside of Network Rail's control to delivering the strategy are:

- Availability of funding to third parties, due to changes in governmental policy or poor economic growth.
- Lack of initial seed funding for business development teams and activities.

The ability to raise third party funding is strongly influenced by Network Rail having some seed/development funding to leverage in other contributions. The availability of such funding is subject to DfT funding allocation.

9.2.3 Internal relationship enablers

A Head of Business Development role has been filled to lead the further development and delivery of the strategy. This role will work very closely with the Director Route Sponsorship and the System Operator Principal Strategic Planner. The Head of Business Development will develop a regional approach, research key development opportunities and identify potential development organisations who may be interested in funding rail projects. They will also be responsible for completing and updating the Anglia route pipeline of Third Party funded potential projects and to identify potential suppliers to support this strategy. Key support is also provided by the central Commercial Finance team and through a community of established Business Development leads across the route teams.

Additionally, Anglia already has delegated authority for the following local panels to help enable Third Party funding approval:

- Anglia Governance Panel reviews enhancement commercial contracts and has can authorise projects to enter into contracts.
- Systems Review Panel integrates system changes.
- Assurance Review Panel (ARP) reviews blockades/access plans.
- Anglia Investment Panel authorises and re-authorises investment submissions if approved: up to £25m for renewals and £10m for enhancements.

9.3 Future focus for Third Party involvement

A list of schemes that will be targeted for third party involvement going forwards has been included in section 9.1. The route has identified that third party funding is likely to fall into three broad types:

- 1. Direct private sector contributions: where private sector entities make direct funding contributions to discrete Network Rail projects (taxation provides existing indirect contributions via HM Treasury).
- 2. Direct public sector contributions: where public sector partners, such as local authorities, make specific funding contributions to particular Network Rail schemes.
- 3. Local co-funding: where the route may look to co-develop and fund major local/regional improvement programmes with local areas. A mayor has now been elected for the Cambridge area.

Funding prioritisation for the route is aligned with the agreed corporate strategy in that it should be focused on raising additional funding for:

- 1. Enhancement projects replanned for CP6 Bow Junction and Ely Area Capacity Enhancement projects.
- 2. Strategically important enhancements in CP6 Priority, Pipeline and Digital Railway schemes.
- 3. Projects generating operating savings and third party benefits, and

the Liverpool Street Area regeneration.

4. Other third party funding (i.e. projects which benefit the railway, but not necessarily saving money against the CP6 plan).

The private sector may benefit financially and materially from Network Rail investment and funding contributions potentially can arise where there are discrete windfall gains from this investment. In addition, partnership opportunities may exist where there is a natural marriage value from collaboration with Network Rail. For example a number of the proposed new station schemes which support housing development and business growth.

The local public sector currently funds smaller locally significant schemes. Devolution is increasingly likely to involve an enhanced future role for them as a specifier for enhancements and therefore potentially a contributing beneficiary.

10 CP6 regulatory framework

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

10.1 Expenditure forecast

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

Table 10.1: CP6 forecast of route expenditure

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6	
Route expenditure	Route expenditure							
Support	6	5	5	5	5	5	27	
Operations	46	57	53	53	53	53	271	
Maintenance	129	134	133	127	126	126	646	
Renewals*	202	198	267	275	305	175	1,221	
Enhancements	202	10	0	0	0	0	10	
Schedule 4 & 8	24	31	43	36	51	24	185	
Allocated / attributed expense	diture							
Traction electricity	48	59	67	67	68	68	329	
Industry costs and rates	19	21	21	21	28	28	119	
System Operator	0	5	6	6	6	5	28	
Support and operations	40	46	48	44	46	44	228	
Schedule 4 & 8	5	6	6	6	6	6	30	
Renewals	76	67	81	70	80	85	382	
Group Portfolio Fund	0	29	37	55	55	69	245	
Non-SoFA expenditure								
BT Police costs	8	8	8	8	8	8	39	
Financing costs	118	102	84	72	61	53	372	
Corporation tax	0	27	56	45	49	48	225	
Total expenditure	922	805	915	891	947	799	4,357	

* Excludes £221m of Digital Railway spend, which is in the plan but not funded by the SoFA.

10.2 Income forecast

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

Table 10.2: Total CP6 income

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Variable and station charges	(57)	(31)	(32)	(32)	(32)	(32)	(160)
EC4T	(49)	(59)	(67)	(67)	(68)	(68)	(329)
Schedule 4 ACS	(20)	(36)	(48)	(41)	(57)	(29)	(211)
FTAC / Network Grant (SOMR)	(317)	(423)	(500)	(512)	(549)	(453)	(2,436)
Grant for tax, financing and BTP	(126)	(137)	(148)	(124)	(117)	(109)	(636)
Income from FNPO	0	(62)	(73)	(68)	(78)	(59)	(341)
Other single till income	(88)	(47)	(47)	(46)	(46)	(47)	(234)
Subtotal (gross revenue requirement)	(658)	(794)	(915)	(891)	(947)	(799)	(4,346)
Capital grant for enhancements	(96)	(10)	0	0	0	0	(10)
Total income	(755)	(805)	(915)	(891)	(947)	(799)	(4,357)

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

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

We have calculated the CP6 route revenue requirement in Table 10.3, below, using a similar approach to CP5 (i.e. similar to the adjusted WACC approach), which focuses on the funding we need to pay for expenditure

during the control period (excluding funding for enhancements). The net revenue requirement in Table 10.3 is the amount of income that we need to recover from regulated access charges, and government grants, in lieu of fixed charges in CP6. This presentation of CP6 funding also supports our calculation of the appropriate amount of fixed costs to recover through Fixed Track Access Charges (FTACs) paid by train operators.

Table 10.3: CP6 route revenue requirement

£m in 2017/18 prices	19/20	20/21	21/22	22/23	23/24	CP6
Route support, operations and maintenance	196	192	186	185	185	944
Allocated support and operations	46	48	44	46	44	228
Traction electricity, industry costs and rates (including BTP)	87	96	96	104	104	487
Schedule 4 & 8	37	49	42	57	30	215
System Operator	5	6	6	6	5	28
Group Portfolio Fund	29	37	55	55	69	245
Allowed return	102	84	72	61	53	372
Amortisation	265	348	345	385	260	1,603
Тах	27	56	45	49	48	225
Gross revenue requirement	794	915	891	947	799	4,346
Other single till income	(47)	(47)	(46)	(46)	(47)	(234)
Income from FNPO route	(62)	(73)	(68)	(78)	(59)	(341)
Net revenue requirement	686	795	776	823	692	3,772

Please note: Following the creation of the Freight and National Passenger Operator (FNPO) route in April 2017, Network Rail's CP6 plan separately identifies the fully allocated costs of the FNPO route (i.e. including costs from central functions and geographic routes). In Table 10.3, above, we show the amount of income we expect our route to receive from the FNPO route. This 'Income from FNPO route' is based on the share of our costs that are allocated to freight and national passenger operators on our route. The allocation reflects where, and how much, freight and national passenger operators use our route infrastructure.

7.1. CP6 financial information

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

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

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

Table 10.4: Financial metrics

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Closing net debt	(3,650)	(2,876)	(2,426)	(2,010)	(1,837)	(1,653)	(1,653)
Closing RAB	5,143	5,132	5,132	5,132	5,132	5,132	5,132
Average net debt / RAB	71%	56%	47%	39%	36%	32%	32%
Group Portfolio Fund	0	29	37	55	55	69	245
Route	0	12	12	12	12	12	61
Portfolio	0	17	24	43	43	57	184
Maturing debt	0	718	419	384	161	174	1,856
Working capital	0	(5)	(35)	2	(19)	8	(50)
Cash requirement (incl. working capital and external debt repayment)	0	819	962	910	935	881	4,507

11 Sign-off

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

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

Authorised by:

Monumarz	Meliha Duymaz Route Managing Director	19 January 2018
Z	Eliane Algaard Director, Route Safety & Asset Management	19 January 2018
B. Milmay	Ben Milway Route Finance Director	19 January 2018
sthe	Simon Ancona Chief Operating Officer	19 January 2018
pord.	Janice Crawford IP Regional Director	19 January 2018

Joint performance activity prioritisation by lead route TOC Appendix A and Freight

The below plans are predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change.

Train Performance		Route	Current	Lower	Expected	Upper	Achievability	Timeframe
London C	London Overground PPM		94.7%	94.5%	94.7%	95.0%	Amber	End of CP6
No.	Key constraints, risks and opportunities	What we p	What we plan to do				Owner	Timescale
1	R: Timetable changes have been committed by ARL to TfL through re-concession process as a result of passenger growth continuing to be forecast upwards	Engage with help them b timetable ch Understand go live. Und funding med	Engage with ARL timetable planning team through the timetable build process to help them build higher quality timetables, and use lessons learned from major c2c timetable change. Identify where any performance modelling is required. Understand the impact of the introduction of new fleet on the infrastructure before go live. Undertake review of line speed improvements aspiration and agree funding mechanism to deliver any agreed schemes.				DLR	CP5 and into CP6 (depending on TT change dates)
2	O: Right time railway and subthreshold delay is key to performance but currently poorly measured and managed	Utilise the n time which v target. Rev	Utilise the new performance metrics for CP6 to bring more direct focus to right- time which will assist ARL in reaching their T-3 (Time to 3 minutes) performance target. Review operating statements as a result of new CP6 metrics				HOP and HOO	CP5 (preparation) and CP6 (delivery)
3	O: Drive asset management to 'predict and prevent'	Work with T Promote bu system with	Work with TfL to specify new fleet with on-board infrastructure monitoring. Promote business case for further intelligent infrastructure and asset management system within the route.			DRL, DRSAM, HOM	CP5 and into CP6 (refine ways of working)	
4	R: Costed CP6 business plan results in only a minor improvement in the impact of service affecting failures, which is lower than customer expectations	Promote bu asset reliab funding opp Richmond -	Promote business case for further minor works that can be undertaken to improve asset reliability when undertaking renewals as per Appendix D. Look at joint funding opportunities to increase resilience in key areas of concern, e.g. Richmond – potentially also using third party funding sources.			DRL, DRSAM	CP5 (application for funding), CP6 (delivery of works)	
5	R: Delay per incident is increasing and has risk of further increase with more passengers	Continue to deliver and develop the Anglia delay per incident programme to deliver sustainable improvement in incident response and service recovery. Introduce 24/7 incident officer cover to focus on large impacting incidents.			SIO, HOP	CP5 and into CP6		
6	O: Impact of external effects, autumn and weather	Current route crime and autumn/winter resilience programmes continue to both mitigate likely risks from societal issues, passenger growth and climate change and develop cost effective improvements. Further develop this by building working relationships with other external agencies local to London.		HOP, DRSAM, HOO	CP6			

@ARRIVA Rail London TOC sign off: Jun Jonathan HARDMAN 30/11/17. NetworkRail ND sign off: Homen Cherr

Forecast, risks and opportunities reviewed and discussed on 30 November 2017. The current CP6 forecast has not been signed off as it does not meet operator expectations.



Train Performance		Route	Current	Lower	Expected	Upper	Achievability	Timeframe
Greater A	Greater Anglia PPM		88.8%	88.6%	89.2%	89.8%	Amber	End of CP6
No.	Key constraints, risks and opportunities	What we plan to do					Owner	Timescale
1	R: Major timetable changes have been committed by Greater Anglia through re-franchising/concession process as a result of passenger growth continuing to be forecast upwards	Engage with higher quality and identify v line speed im agreed scher	Engage with Greater Anglia through timetable build process to help them build higher quality timetables, use lessons learned from major c2c timetable change and identify where any performance modelling is required. Undertake review of line speed improvements aspiration and agree funding mechanism to deliver any agreed schemes.				HCR, DRS, HOP	CP5 (major change) and into CP6 (minor changes)
2	O: Right time railway and subthreshold delay is key to performance but currently poorly measured and managed	Utilise the ne right time rail Cambridge, (Utilise the new performance metrics for CP6 to bring more direct focus. Develop right time railway groups focusing on key problem regulation points like Cambridge, Clapton and Ipswich				НОР	CP5 (preparation) and CP6 (delivery)
3	O: Drive asset management to 'predict and prevent'	Work with Gr monitoring. management	Work with Greater Anglia to specify new fleet with on-board infrastructure monitoring. Promote business case for further intelligent infrastructure and asset management system within the route.				DRSAM	CP5 (specification) and CP6 (delivery and business as usual)
4	R: Costed CP6 business plan results in only a minor improvement in the impact of service affecting failures, which is lower than customer expectations	Promote business case for further minor works that can be undertaken to improve asset reliability when undertaking renewals. Look at joint funding opportunities to increase resilience on critical junctions.				DRSAM	CP5 (application for funding), CP6 (delivery of works)	
5	R: Delay per incident is increasing and has risk of further increase with more passengers and trains run	Continue to deliver and develop the Anglia delay per incident programme to deliver sustainable improvement in incident response and service recovery				SIO, HOP	CP5 and into CP6	
6	O: Impact of external effects, autumn and weather	Current route crime and autumn / winter resilience programmes continue to both mitigate likely risks from societal issues, passenger growth and climate change and develop cost effective improvements. Further develop this by building working relationships with other external agencies				HOP, DRSAM, HOO	CP6	
7	O: Volume of new rolling stock entering into service before, and at the start of CP6 across the route for Greater Anglia	Engage with Greater Anglia during build and testing of units to understand and minimise performance and asset degradation impact on the network. This to include impact on rail wear, signal sighting, level crossing barrier down time and power capability. Train stabling risk taking into account other TOC and FOC plans to be included in the fleet introduction plan.			DRSAM	CP5 and into CP6 (depending on rolling stock delivery dates)		

greateranglia TOC sign off:

Mallie . Amman Crus

Forecast, risks and opportunities reviewed and discussed on 30 November 2017. The current CP6 forecast has not been signed off as it does not meet operator expectations.

NetworkRail

NR sign off:

Train Pe	rformance	Route	Current	Lower	Expected	Upper	Achievability	Timeframe
c2c PPM	c2c PPM		94.4%	95.5%	95.6%	95.9%	Amber	End of CP6
No.	Key constraints, risks and opportunities	What we plan to do				Owner	Timescale	
1	O: Right time railway and subthreshold delay is key to performance but currently poorly measured and managed	Utilise the ne franchise cor	Utilise the new performance metrics for CP6 to bring more direct focus to the c2c franchise commitment for right time. Develop robust recovery plans.				HOP	CP5 (preparation) and CP6 (delivery)
2	O: Drive asset management to 'predict and prevent'	Work with operators to specify additions to fleet with on-board infrastructure monitoring. Promote business case for further intelligent infrastructure and asset management system within the Anglia route.				DRSAM	CP5 (specification) and CP6 (delivery)	
3	R: Costed CP6 business plan results in only a minor improvement in the impact of service affecting failures, which is lower than customer expectations	Promote business case for further minor works that can be undertaken to improve asset reliability when undertaking renewals.				DRSAM	CP5 (application for funding), CP6 (delivery of works)	
4	R: Delay per incident is increasing and has risk of further increase with more passengers and trains run	Continue to deliver and develop the Anglia delay per incident programme to deliver sustainable improvement in incident response and service recovery				SIO, HOP	CP5 and into CP6	
5	O: Impact of external effects, autumn and weather	Current route crime and autumn / winter resilience programmes continue to both mitigate likely risks from societal issues, passenger growth and climate change and develop cost effective improvements. Further develop this by building working relationships with other external agencies			HOP, DRSAM, HOO	CP6		
6	O: New rolling stock entering into service during CP6	Engage with c2c during build and testing of units to understand and minimise performance and asset degradation impact.				DRSAM	CP5 (preparation) and CP6 (delivery)	



TOC sign off:

Ammiliant NR

NetworkRail NR sign off:

Forecast, risks and opportunities reviewed and discussed on 30 November 2017. The current CP6 forecast has not been signed off as it does not meet operator expectations.

Train Pe	formance	Route	Current	Lower	Expected	Upper	Achievability	Timeframe
TfL Rail PPM		Anglia	95.0%	93.8%	93.9%	94.2%	Amber	End of CP6
No.	Key constraints, risks and opportunities	What we plan to do					Owner	Timescale
1	R: New timetable to be delivered to coincide with the opening of the Elizabeth Line	Engage with quality timeta understand c	Engage with TfL Rail through timetable build process to help them build higher quality timetables, use lessons learned from major c2c timetable change and to understand outputs from performance modelling				HCR, DRS, HOP	CP5 and lessons learned (minor changes) in CP6
2	O: Right time railway and subthreshold delay is key to performance but currently poorly measured and managed	Utilise the new performance metrics for CP6 to bring more direct focus to right- time which will assist TfL Rail in reaching their T-3 (Time to 3 minutes) performance target. Review operating statements as a result of new CP6 metrics				НОР	CP5 (preparation) and CP6 (delivery)	
3	O: Drive asset management to 'predict and prevent'	Work with operators to understand how new fleet with on-board infrastructure monitoring can be used to drive maintenance activities.				DRSAM	CP5 and into CP6	
4	R: Costed CP6 business plan results in only a minor improvement in the impact of service affecting failures, which is lower than customer expectations	Promote business case for further minor works that can be undertaken to improve asset reliability when undertaking renewals				DRSAM	CP5 (application for funding), CP6 (delivery of works)	
5	R: Delay per incident is increasing and has risk of further increase with more passengers and trains run	Continue to deliver and develop the Anglia delay per incident programme to deliver sustainable improvement in incident response and service recovery				SIO, HOP	CP5 and into CP6	
6	O: Impact of external effects, autumn and weather	Current route crime and autumn / winter resilience programmes continue to both mitigate likely risks from societal issues, passenger growth and climate change and develop cost effective improvements. Further develop this by building working relationships with other external agencies			HOP, DRSAM, HOO	CP6		
7	O: Volume of new rolling stock entering into service before CP6	Engage with TfL Rail during testing of units to understand and minimise performance and asset degradation impact.		DRSAM	CP5			



NR sign off:

TOC sign off:

Homon Court

Forecast, risks and opportunities reviewed and discussed on 29 November 2017. At present we do not agree the CP6 targets. The TfL Rail expectation is a 95.0% PPM CP6 exit. Further work will be done to extrapolate what is currently an Anglia forecast to include the Western section as TfL Rail becomes full Crossrail in CP6.

Freight and National Passenger Operators

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

National Passenger Operators:

CrossCountry is a regular user of Anglia route, with services to and from Stansted Airport. In addition to the Ely area scheme in CP6, there are two important signalling schemes that could improve Cross Country services in CP6. These are the Cambridge area signalling renewal and Ely to Peterborough.

Integration meetings are schedules early in 2018 to connect the Ely scheme and signalling renewal team. The interdependencies that these schemes have are important and need monitoring at programme level to ensure maximum benefits are obtained.

Other key issues include right time arrivals from to and from Peterborough, TSR management and timely removal and incident reduction in Cambridge area.

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

No	Key Challenges, Risks and Opportunities	What we plan to do
1	Aggregate Growth O: Volume growth from sea- dredged sand facilities to concrete batching plants across the Southeast – Angerstein, Cliffe, Grain, Griffin Wharf, Dagenham to Purley, Battersea, Tolworth, Park Royal, Brentford R: Capacity and capability. Infrastructure not able to cope with traffic demand.	 Explore opportunities for longer and heavier trains maximising loco capability Support introduction of new wagons that maximise payload/length ratio Support Terminal and Yard developments – e.g. complete redevelopment of Bow Yard on the Anglia Route for rail freight to be a part of the future Olympic Legacy development in Stratford. Support introduction of 'pop-up' terminals, bringing out of use infrastructure back into use and increased use of lineside loading Explore opportunities for new capacity – enhanced use of HS1 and the Channel Tunnel for rail freight to either free-up paths on the classic network or stimulate entirely new traffic

Challenges and Opportunities:



No	Key Challenges, Risks and Opportunities	What we plan to do	
2	Domestic & Deep Sea Intermodal Growth O: Volume growth from Ports / Terminals (Felixstowe, London Gateway, Tilbury 2) R: Train paths and SRT discrepancies with longer, heavier trains R: Capacity and capability, including gauge clearance and diversionary capability	 Work with customers to maximise opportunities to increase length of trains Increase Average Journey Speed origin to destination Explore provision of recognised diversionary routes with adequate capability Facilitate new terminal developments – future expansion of London Gateway with additional rail terminals similar to the Port of Felixstowe. Demand dependent, but rail needs to be fostered as the best solution for end users. Explore opportunities for new capacity – Strategic Freight Corridor improvements on the cross country route from Felixstowe to the Midlands and the North including promoting the business cases for Haughley Junction Doubling, Ely-Soham Doubling, Ely area improvements, as well as off route enhancements at Leicester to facilitate the future growth in traffic from Felixstowe 	
3	Gauge establishment C: Establishment of recognised diversionary routes for gauge critical traffic	 Explore gauge clearance on key corridors, e.g. (GE Mainline, Thameside, North London Line, Gospel Oak-Barking, West Anglia Main Line), and provision of diversionary capability Explore funding opportunities, including Third Party Documented diversionary routes for core intermodal flows Review of RT3973 provision to more closely align with traffic flows – reduced duplication 	
4	Other Commodity Traffic Growth O: Steel & other scrap metals O: Automotive O: Forest Products O: Bulk O: Aviation Fuel & other Petro-chemicals	 Work with customers to maximise opportunities for longer and heavier trains maximising loco capability Support Terminal / Yard developments to facilitate growth Support introduction of 'pop-up' terminals, bringing out of use infrastructure back into use and increased use of lineside loading. Promotion of and assisting customers to set up new automotive flows and growing traffic from Dagenham and Purfleet Deep Wharf. Work with FOCs and Freight End Users to deliver new network connections and necessary capacity and capability, or bring out of use infrastructure back into use including the Parkeston Tip Sidings 	
5	Franchise changes / Crossrail R: Refranchising of Greater Anglia Franchise on Anglia seeks greater capacity on shared lines	 Retain adequate capacity, capability and flexibility for existing and forecast freight Review Impact on possession strategy from new flows Review stabling plans for new rolling stock / change of locations including the introduction of Brantham Depot for Greater Anglia, an enhanced Ilford Depot for Crossrail and Greater Anglia 	
6	Infrastructure enhancements / electrificationO: Greater capacity/opportunity following enhancement (Thameside/Great EasternOLE Enhancements).O: Electrification of the Gospel Oak – Barking Line - opportunity for throughelectric rail freight to Ripple Lane & Barking.R: Loss of Capacity following timetable change. Crossrail and Greater Anglia onAnglia Route	 OLE upgrades could potentially present greater opportunities for electric rail freight on the GE and Thameside Routes. Support Route forums (RSPG etc.) to influence scope and secure freight benefit following scheme delivery FNPO, FOCs and Freight End Users to provide appropriate input into the decision making process Work with Route Business development team to identify potential Third Party funding sources 	
7	Construction projects / HS2 O: Opportunity for spoil and waste out and aggregate and other commodities in to support construction R: Capacity for new aggregate and spoil flows from HS2 project	 Work with DfT, HS2 Ltd, FOCs and End User -customers to offer solutions to demands of major projects Work with customers to manage the impact of major projects on their business (HS2) Terminal / Yard developments ('pop-up' terminals / lineside loading potential) Work with FOCs and Freight End Users to deliver new network connections and necessary capacity, or bring out of use infrastructure back into use 	
8	SRFI Terminal Development O: SRFI terminal development supports intermodal growth especially addressing demand for inland terminals C: Securing of sufficient capacity to support SRFI developments through planning and into use End User-customer service O: Closer working with FEU's enables greater understanding of customer priorities	•	Work with Developers to understand SRFI proposals progression through planning Offer NR support to proposals when adequate strategic fit and capacity Work with System Operator to support funded early stage timetable work for SRFI developers. Intermodal developments for Anglia will be the additional paths from Felixstowe and the expected expansion of London Gateway Intermodal Operation Work with end user -customers to develop business growth and support modal shift to rail Work with end user -customers to strengthen service delivery and support
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10	Review of redundant and unused assets O: Following traffic changes in CP5 and structural change in energy market, opportunity exists to review size and organisation of non-passenger network R: FOC objection to supporting Network Changes	•	Identify opportunities to reduce maintenance costs and remove unneeded infrastructure Regularise the status of freight assets and other assets including gauge, S&C (actual v published capability) Explore potential to transfer ownership of redundant lines / assets to secure better opportunities for redevelopment
11	Yards and sidings infrastructure R: Yard and Siding Infrastructure asset condition is critical to avoid derailment events and customer LTI's	•	Working with Routes and customers to review asset condition on regular basis. Keeping up emphasis on maintaining and enhancing major terminal infrastructure, including Bow. Working with Routes and customers to establish and benchmark walking route use and condition. For instance establishing a walking route to the headshunt for the Carless Operation at Parkeston
12	Timetable Review O/R: Timetable Improvements to closely reflect capability of trains and capacity of network required on busier network	•	Continuation of CP5 work to review path usage and remove unused paths and agree strategic capacity Work with FOC's to more closely align Train Slots in the Timetable with Access Rights in the TAC, and remove unused rights where there is no corresponding Train Slot Work with the Route, System Operator and FOC's/TOCs where in upcoming major timetable re-casts the available capacity may be less than contracted rights, the new Greater Anglia and Crossrail Timetables for Anglia Work with System Operator and customers to review opportunities to improve average speed origin-destination Review with System Operator and customers suitability of current systems to capture network constraints and traction capability (Loads Book, Timing Loads, Lengths)
13	Digital Railway O: Successful introduction of Digital Railway offers potential for growth on busiest corridors	•	Act as internal client on behalf of Freight to build sympathetic capability for freight traffic needs. The first major challenge will be the implementation of Traffic Management on the Thameside Route and ensuring that Freight is fully represented and interests protected as we move towards this new way of operating
14	Upgrades and Disruptive Possessions R: Major upgrade programmes including Crossrail, Thameslink and Great Eastern Track and S&C renewals including High Output will require significant disruptive access	٠	Champion requirements of FOCs and Freight End Users so that services can operate as required during disruptive possessions including availability of diversionary routes and timely provision of capacity studies to identify train service capability

FNPO CP6 Plan to be delivered alongside the Anglia route

Section	Key Themes	Strategy	Specifics	Owner	Timescale
Safety	Lost Time Incidents	Reduce LTIs through concentration on Network Rail yard infrastructure, connecting sidings and walking routes conditions.	 Published rolling programme of joint health and safety visits with customers (FOCs/TOCs) to agreed sites Complete review of authorised walking routes/crew change locations per customer Subject to funding, a programme of improvements will be specified and implemented 'Go Look See' with customer within two weeks of any reportable customer LTI event on network infrastructure 	FNPO Operations and Safety Manager/ SRFM	Initial Programme to be published March 2018 then annually during CP6
	Freight Train derailments	Reduce freight train derailments through concentration on Network Rail yard and sidings infrastructure.	 Published rolling programme of joint health and safety visits with customers to agreed sites End Customer Forum to be implemented to share issues of concern around connection points and maintenance either side of boundary point Subject to funding, a programme of improvements will be specified and implemented 	FNPO Operations and Safety Manager/ SRFM	Initial Programme to be published March 2018 then annually during CP6
	FNPO SPADs	Reduce freight SPADS by collaborative working	 SPAD Forum to be implemented with FOCs to share learning and best practice 	FNPO Operations and Safety Manager	Creation of Forum by April 2018. Meeting regularity proposed quarterly.
Performance	Right time departure performance at key hubs and terminals	Use Strategic Freight Corridors to focus delivery Measuring Right Time Departures from terminals at the start of the journey	 Local Working Groups (e.g.Thameside) Use of Control Rooms and Visualisation at major sites (e.g. Felixstowe) Re-brief Freight Strategy – 'Freight Delivery Matters' and linkage between RTD and FDM delivery 	SRFM/ FNPO Performance Manager	Existing Working Groups to continue into CP6. Quarterly FNPO review of terminal engagement arrangements.
	Measuring FDM and FDM-R	Focus on defined key routes: - Asset Performance - Asset Resilience - Effective contingency plans	 Target FDM-R Route target for end CP6 of 92.9% Input to Route CP's for consistent application of freight contingency arrangements FSDM input to incident recovery real-time to build consistency Asset Reviews with Route Asset teams to share traffic forecasts and asset challenges with SRFM Influence at RSPG to define future asset strategy in terms of renewals to support freight growth 	SRFM/FNPO Performance Manager	Annual target setting during CP6. Periodic review of FDM- R delivery and key influencers
	Joint Freight Performance Improvement Strategies	Agreed joint strategy with each FOC including details of plans to reduce each delay area	 Complete plan annually with each FOC concentrating on primary delay categories Agreed industry information share Regular reviews against plan with each Route and FOC customer 	FNPO Performance Manager/CRE	Joint Strategy Plan per Operator to be published annually during CP6 and reviewed quarterly

Section	Key Themes	Strategy	Specifics	Owner	Timescale
Capacity & Capability	Identifying future capacity and capability needs.	 Bring together all freight capacity plans: Route Studies SFN Customer specific 	 All future project specifications to include a specific output level for freight services, reflecting the SFN specifications and forecast future traffic requirements. Future Capability needs assessment to be undertaken – RA, Gauge, HAW – future plans for improvement to meet capacity requirements Interactive maps for Gauge, RA to be created and maintained Continued support for longer, heavier trains programme 	Project Sponsor/SRFM. FNPO Head of Strategic Capability/ FNPO Head of Network Management	Future capability programme definition by April 2018 and delivery per strategic route
	Review existing capability constraints	Undertake Capability Review	 Improved gauge and operational flexibility on key freight corridors Robust gauge cleared diversionary routes Transparent network capability per route for customers 	SRFM/ FNPO Head of Strategic Capability/ FNPO Head of Network Management	Existing capability constraints review definition by April 2018 and delivery per strategic route
	Freight Train Average Speed	Undertake Average Speed Review	 Establish framework for average speed measurement and improvement Work with Stakeholders to target specific flows and services Annual plan in connection with annual timetable change 	FNPO Head of Performance/ FNPO Head of Strategic Capability/ FNPO Head of Network Management	Measurement framework to be agreed by industry May 2018. Flows to be agreed for Dec 2018 TT change and annually thereafter
	Connections to new terminals and SRFIs	Facilitate connections to the network and associated capacity	 Work with FOC's, Freight End Users and Developers to identify potential new connections, including development of SRFI's Information share of prospective sites via RSPG Facilitate new network connections e.g. (Route TBC) Identify potential sites (new connections, bringing out of use infrastructure back into use and increased use of lineside loading) to facilitate growth, e.g. (Route TBC) for aggregates Advice to System Operator of future sites and flows to understand timetable and capacity impact Timetable studies for major terminal developments, e.g. SRFI's 	SRFM/ FNPO Business Development Managers	Forward programme of FEU and Developer engagement to be agreed annually during CP6. Freight Developments Register to be held by SRFM for review at RSPG quarterly.
	Delivery of agreed CP6 freight enhancement programme	Continuation of Strategic Freight Network funding and industry governance group	 Promotion of potential freight projects and enhancement schemes Prioritise funding to best meet demand and facilitate growth Align SFN proposals with Route and National proposals to deliver a coherent forward strategy which best meets overall requirements 	FNPO Head of Freight Development/ System Operator	Ongoing
	Consideration of incremental freight improvements in all schemes	Structured review process with Route planners and Sponsors	 Work with FOC's and System Operator to identify opportunities for incremental freight enhancements as part of the development of enhancement and renewals proposals, e.g. faster entrance/exit speeds into loops and through crossovers. Defined and consistent engagement process to be agreed with Route Planning team and Sponsors 	SRFM/ System Operator	Defined engagement process and inputs to be in place with Route Strategy by April 2018

Section	Key Themes	Strategy	Specifics	Owner	Timescale
Network Availability	Engineering plans that meet both FNPO customer and Route needs.	Regular and co- ordinated freight input into • Engineering Access Statements • Access Planning Requests	 Engineering plans that are; Transparent co-ordinated consistent across Routes planned well in advance and take into consideration contingency arrangements for long distance services 	SRFM/ FNPO Capability and Planning Manager	Annual review of process/requirements between FNPO and Engineering Planning from March 2018 incorporating end to end Access process
Freight Asset Management Plans	Effective asset management arrangements for yards and sidings infrastructure	Create a joint understanding of maintenance responsibility, traffic level changes and asset condition	 Enable Asset Management and Engineering teams to plan the targeted maintenance and renewals requirement of each site Ensure appropriate standards in use at each location. 	SRFM/ Route COO/ RAM	Biannual review of yard and sidings maintenance priorities / traffic flows commencing 2018
	Review of Locomotive and Heavy Axle Weight (HAW) track and structure restrictions	Establish potential/cost for removal of restrictions	Input into track/structures renewals and maintenance plans	SRFM/ Route COO/ RAM	Review definition and programme issued by April 2018. Delivery per strategic route to be programmed.
	Review Freight Only lines and other infrastructure	Understand the potential to reduce OMR.	 Review based on existing & predicted future use Input into track/structures/maintenance plans Outputs to be agreed with customers/ORR 	SRFM/ Route COO/ RAM	Definition of Review by Dec 2017. Delivery of initial opportunities report by July 2018. Agreed Action Plan through CP6 per Route
	Removal of TSRs / PSRs in timely fashion	Establish removal plan recognising freight impact	 Work with the Route teams to identify the impact of speed restrictions on freight services and work collaboratively to remove them. 	SRFM/ Route COO/ RAM	Ongoing periodic review of performance impact of TSRs to be agreed per Route

Appendix B Key assumptions

Ref no.	Торіс	Assumption	Areas of spend impacted
1	Policy	Engineering Policy does not change and therefore no additional volume will be required	CAPEX and maintenance OPEX
2	Access	Operators do not deviate from agreed CP6 engineering access principles	CAPEX, maintenance OPEX, Enhancements spend
3	Safety	No new safety risk areas materialise outside those already covered in our safety strategy which need additional safety plans creating and delivering	All areas of spend affecting passenger, public and workforce
4	Safety	The LTIFR target is set to reflect Network Rail's national aspiration to benchmark against other industries who lead on safety. However, the criteria that other similar industries use varies from how Network Rail currently measures LTIFR. As a result it is recognised that there will need to be a level playing field with which to compare NR's LTIFR, which will require changes to the definition of what incidents are counted as LTIS (Lost Time Incidents) within Network Rail.	Safety LTIFR trajectory
5	Level Crossings	Risk levels will not substantially change at individual crossings	CAPEX, all OPEX, Enhancements spend
6	Deliverability	Current Enhancement Delivery Plan (EDP) milestones achieved with no further deferral of significant milestones into CP6 putting pressure on availability of key resources including access	CAPEX, Maintenance OPEX, Enhancements spend
7	Sustainability	No significant drop in the renewals volumes during CP5	CAPEX, Maintenance OPEX
8	Sustainability	The Norwich-Yarmouth-Lowestoft project will be delivered in CP5	CAPEX, all OPEX
9	Sustainability	New rolling stock being introduced does not cause a change to forecasted asset condition	CAPEX, Maintenance OPEX
10	Deliverability	Base access plan assumes that Digital Railway rollout will not require significant access & resources that would adversely impact on the delivery of the CAPEX renewals	CAPEX, Maintenance OPEX
11	Train performance	The actions being put in place by Network Rail and Train Operators to address train performance issues in CP5 deliver the forecasted out-turn in performance at the end of CP5	OPEX

Ref no.	Торіс	Assumption	Areas of spend impacted
12	Train performance	Forecasted train performance in CP6 aligns with forecast model.	OPEX
13	Train performance	CP6 train performance forecasts include Network Rail modelled risks and benefits. TOC forecasts of risks and benefits have not been received for input into the models.	OPEX
14	Locally Driven Customer Measures	Congestion improvement works required at Liverpool Street are not completed until CP7	Passenger satisfaction (Liverpool St)
15	Enhancements	The enhancement projects that have passed final investment decision making have been included in the access delivery assessments. A high level assessment has been made for potential access windows to deliver the Ely Area Capacity Improvement Programme and Bow Junction Hendy rollover projects, although these schemes have not passed final investment decision	Enhancements spend, and scorecard outputs
16	Enhancements	Crossrail phases are achieved on-time	CAPEX and OPEX
17	Finance	Efficiencies projects declared in CP5 deliver forecasted benefits	CAPEX and OPEX
18	Finance	Industrial Relations strategy changes to allow redundancies	CAPEX and OPEX
19	Planning Assumption	Contingency for potential remedial works resulting from extreme weather events is not included	CAPEX and OPEX
20	Train performance	It will be possible to reopen the calibration of Schedule 8 benchmarks during the control period, after introduction of full new timetables for Crossrail and Greater Anglia services in December 2019.	OPEX

Appendix C Route context

The below diagram provides a view of key route events due to take place over the remainder of CP5 and throughout CP6.



^{*} Enhancements shown in this illustration may still require a funding commitment, as outlined in this plan. The timescales are therefore indicative and reliant upon funding being confirmed.

Appendix D Scenario planning

Part (1): Tactical scenario planning for CP5

• Scenario: 20% decrease in total remaining expenditure

Asset	Option	Maximum potential	Risk of cu expend	ırtailing liture	Comment on impacts/issues	
		saving	Performance	Reputation		
Track	Track refurbishment to be delivered by WD currently planned in the last quarter of 2018/19	£2m	А	А	2-3 incidents per year on CB3/CB4 routes	
Track	Loss of 3.6km of PL renewal in Q4 18/19 Brentwood UE – 399m Harold Wood UE – 967m Harold Wood DE – 1046m Chadwell Heath UE – 848m Goodmayes DE – 384m	£3m	R	R	Predicted deterioration in performance between llford and Shenfield through rough ride incidents from 3 to 8 per year. Predicted increase in the number of broken rails per year from 1 to 2.	
Track	Removal from plan of Witham L/E 8 x S&C units, 0.15km PL, 2 x Buffer stops. LTN1 (GE main line) – Linespeed 100mph Key renewals driver ballast condition and it has been unresponsive to maintenance intervention,	£5m	R	R	60mph TSR COT to remain on up main and would reduce to a 30/60mph TSR by mid 2019. 60mph TSR COT imposed on the down main by start 2020.	
Track	Removal of plan of 4.6km of Plain line renewal at Woodbridge and Saxmundham. Predicted tonnage increases over 300%. Criticality Band 5 / Track Category 5 / Linespeed 60/55mph. This has been unresponsive to maintenance intervention	£6m	R	A	Primary performance risk from ESRs due to broken rails, broken fishplates and dipped joints. Estimated increase for 2 to 5 incidents per year on each site. Predicted COT TSR of 40mph imposed on the Woodbridge site by the end of 2019 and on the Saxmundham site by mid 2020. The proposed level of reduction of potentially 8km (3.6km + 4.6km) would take the delivery levels below the PSM minimum, with the effect the unit rate would increase and the cost reductions reduce.	
E&P	Slipping 216 structure renewals and cancelling stolen return conductor replacement within the remainder of the OLE general project	£4m	A	A	Low probability of significant incidents (ie. over 1000 min) Mitigation includes regular inspection £5k per annum/ implementation of TSR Ongoing telecoms performance issue plus current mitigation requires significant trackside attendance for several years whilst new electrification system design is produced and installed.	
S&T	Remove Melton to Woodbridge crossing renewal	£5m	A	R	Will not achieve FWI reduction, equipment would still require some form of life extension, political fallout from the stakeholders in the area	
S&T	Removal of the LX renewals as Chesterton, Chettisham, Sawston, Hinxton and Shepreth.	£10m	А	А	Asset condition very poor, it would require some form of intervention at Sawston as wire degradation is classified at severe, some reputational damage around Chesterton new station (Cambridge North)	

Asset	Option	Maximum potential	Risk of cu expend	ırtailing liture	Comment on impacts/issues	
		saving	Performance	Reputation		
B&C	Year 4 and Year 5 Buildings reactive	£2m	А	A	High risk of increased faults (increase in CRI), workforce safety issues, reduction in customer satisfaction scores at Liverpool Street station	
B&C	Year 4 and 5 Buildings Liverpool Street roof development	£2m	А	A	The roof has reached the end of its life and we would not be able to deliver it in CP6 ;impact passenger safety measures, operational restrictions, reduced customer satisfaction scores and/or impact on retail turnover	
B&C	Year 4 and 5 Earthworks/drainage	£1m	R		Significant risk of impact on performance from an earthwork failure	
B&C	BGK 1393 Subway and River Lea	£0.75m	A	A	The adjacent redundant bridge is being reconstructed as part of WAML.	
B&C	BGK 1337 Three Colts Lane	£1.5m	А	R	This structure is the subject of a Network Change for which we had initially committed to increasing the RA by 2017. Deferral would require a further change to extend the timescale into CP6.	
B&C	LTN1 30 Malcolm Rd	£0.25m	R	R	A Track renewal is planned for 2019 which would be impacted as no lifts would be permitted over the structure. (See below FSS1 comment also)	
B&C	TAH2 448 Latimer Road	£0.75m	А		This structure is in a very poor condition. Works to this line were reduced by 50% when the budgets were reduced at RF8 (2015).	
B&C	TAH2 456 Lorne Road	£0.75m	А	R	This structure is in a very poor condition and personnel access will be restricted over the structure.	
B&C	FSS1 524 Devonport Street FSS1 529 Caroline Street FSS1 590 Repton Street	£6m	А	R	There is currently a reduction to RA3 on the FSS1 line as a result of structure capacity. There will be no works being completed by IP in year 4, MMF overhead will remain	
Total		£50m	R	R	Presented in RF2 – option chosen but not included here was to release the efficiencies from the GE OLE project	

Key to risk colours

A: no additional benefit

G: some additional benefit

G+: considerable additional benefit

Part (2a): CP6 scenario planning: investment options

This section describes the benefits of the proposed additional renewal investments on the route, known as the Strategic Renewals Investment Options.

- The starting basis for the core CP6 OMR plan is the bottom-up workbank developed by the respective RAMs, which identified the need for c.£2.1bn of renewals across the route.
- The projects not included in the core CP6 OMR funding plan were refined to focus on improved performance needs by addressing strategic renewals across reliability, resilience and safety. The projects were not included as part of the core CP6 OMR budget as they were not specifically addressing obsolesce risk from life-expired assets that were at risk of breaching asset policy requirements.
- The list has been refined by the RAMs, Safety and Performance teams to generate a series of projects required to further improve safety and performance of the Anglia route.

Summary of additional improvements

Investment category	CP6 total (£m)	CP6 CAPEX (£m)	CP6 OPEX (£m)
Core plan + Digital Railway SOBC	2386	1442	944
- Enhanced response and 'prevent' capability			44.6
- Improving Track Access and providing additional equipment		20	
- Improving the environment and training for staff			6
 Asset Reliability Improvements 			7.3
- Environmental Improvements and Weather Resilience		54.6	
- Improving Public Safety			0.5
TOTAL: core plan plus investment	2519	1516.6	1002.4

Note: capital costs are based on 2015/16 unit rates for Weather Resilience. All other costs are estimates

Detail of additional initiatives

Category	Safety Benefit	Performance Benefit	Supporting KPI (Qualitative Benefits)	Description of proposed spend	Capex Cost	Opex Cost (over CP6)
TOTAL		-			£74.6m	£58.4m
Enhanced Response an	d 'Pre	vent'	Capability		-	£44.6m
Response (time to site) improvements		V	Improve time to site to respond to incidents and intelligent infrastructure alerts. Improve OnTime performance for operators and reduce Cancellations. PPM Improvement per lead operator: GA 0.1%	Additional response capability is critical to reducing delays on the route and improving primary delay minutes. It will deliver S&T and Pway response capability at: • Romford (New depot): 20 staff • Bury St Edmunds (New depot): 20 staff • Bishop Stortford (New depot): 20 staff • Hackney (New depot): 20 staff • Chelmsford 3 MOMs • Camden 3 MOMs • Richmond 20 staff This would to reduce time to site to under 30 minutes in the inner areas and to 30 minutes in the outer area.	-	£28.4m
Fleet Rescue		Ø	Improve time to site to respond to fleet failures. Improve OnTime performance for operators and reduce Cancellations. PPM Improvement per lead operator: GA 0.4% ARL 0.1% MTR 0.3% c2c 0.1%	With continuing poor fleet reliability, and the introduction of new fleet across the route, this would provide a rescue facility for failed trains – both new, and old. It would provide a rescue loco with a driver 24/7	-	£11.8m
Security	Ø	Ø	Prevent route crime incidents to improve OnTime performance for operators and reduce Cancellations PPM Improvement per lead operator: GA 0.1% MTR 0.1% Safety benefit derived from less incidents, so fewer staff required trackside and fewer staff exposed to fatality events.	 Additional security team capability as the external impact on the network is a growing issue and this will mitigate against trespass and fatality incidents. The proposal would give the addition of: 1 x 12 hr roaming security team to prevent trespass 2 x 12 hr semi static security team to prevent fatalities 1 x embedded BTP inspector 2 x BTP PCs plus unmarked vehicle 3 x MIO teams inner area (to include one medic trained). 	-	£3.6m

Category	Safety Benefit	Performance Benefit	Supporting KPI (Qualitative Benefits)	Description of proposed spend	Capex Cost	Opex Cost (over CP6)
Performance Analysis			OnTime Performance Improvement	Additional support to the performance analysis team for Timetable Performance to ensure timetable changes in CP6 are robust and result in performance improvement. This includes 1 lead timetable analyst, and 2 supporting timetable performance analysts.	-	£0.8m
Improving Track Acces	s and	provic	ling additional equipment		£20m	-
Small Plant	V		Workforce safety – FWI, Lost Time Injury Frequency Rate: Reduction in manual handling injuries LTIFR benefit: 0.0134	The provision of improved trolleys, mechanical aids and other small plant for maintenance and inspection activities.	£3m	-
Access to Assets	Ø		Workforce Safety – Lost Time Injury Frequency Rate:	The access arrangements to a number of key assets would be upgraded. These are likely to be high use locations and would include the upgrading of access paths and steps and provision of lighting. This would complement the access point upgrade.	£5m	-
Cess Path	V		Reduction in slips, trips, and falls Performance improvement – reduction in response and fix time LTIFR benefit: 0.1031	It is proposed to refurbish the entire cess path that is installed on the Great Eastern and the Essex Thameside routes. Additionally this would also add further section of new cess path where required. This item complements the 'Access to Assets' item above.	£5m	-
Junction Lighting	Ø	Ø		Provision of junction lighting at a number of ley locations.	£2m	-
Trackworker Warning systems	Ø		Workforce safety – FWI, LTIFR: Lessening the risk of staff being struck by a train LTIFR benefit: 0.0191	Installation of trackworker warning systems for protecting workers at key junctions and lines of Route. This includes the utilisation of T-CODs, remote disconnection devices and the use of lineside early warning systems	£5m	-

Improving the environm	ent ar	nd trai	ning for staff		-	£6m
Welfare Facilities			Legal Compliance LTIFR benefit: 0.00573	Procurement of site welfare facilities. This would be a mix of welfare units that can be located at an access point or welfare vehicles.	-	£3m
Safety leadership: training and coaching	V		Workforce safety –Lost Time Injury Frequency Rate: Reduction in slips, trips and falls LTIFR benefit: 0.0248	Provide frontline leaders (section managers and team leaders) with core leadership skills	-	£2m
Driver Training	V		Workforce safety –Lost Time Injury Frequency Rate: Preventing road traffic accidents LTIFR benefit: 0.0248	Vehicle driver training to ensure staff are trained for the vehicles they drive	-	£1m
Asset Reliability Improv	emen	ts			-	£7.3m
Critical Junctions		V	Prevent asset failures at critical junctions to improve OnTime performance for operators and reduce Cancellations. PPM Improvement per lead operator: GA 0.1% MTR 0.1%	 Provision to deliver the following to improve asset reliability in key locations: Elmotherm treatment to IBJs Critical junction enhancements and 3 critical junction enhancement teams: 2 in the inner and 1 in the outer Additional critical spares for each junction to make faster repairs 	-	£5.8
Track Reliability		Ø	Remove speed restrictions to improve OnTime performance. PPM Improvement per lead operator: GA 0.3% MTR 0.1% c2c 0.1%	Provision to improve the removal of temporary speed restrictions and manage temporary speed restrictions through 1 Speed Restriction manager with a staff member to predict and prevent speed restrictions, and to remove them with minimal impact on the railway.	-	£1.5m
Environmental Improve	ments	and V	Veather Resilience		£54.6m	-
Environmental improvements	V		Reduction in carbon emissions	Safety and Sustainable Development improvements to deliver environmental improvements to the strategic plan	£10m	-
Weather Resilience and Earthworks	Ø	Ø	 Asset reliability/resilience: Sites selected have previously been prone to reliability risks Earthworks strengthening will improve asset resilience Improved asset reliability against adverse weather events Performance: Improved performance as a result of: Reduction in delay incidents due to Weather and Civil Engineering Failures 	The following weather resilience and earthworks have been selected to comply with Anglia's submission to the Initial Industry Advice (IIA) need to further safeguard the ongoing operational availability of the network against current and future environmental threats. A total of 18 earthworks projects and 5 weather resilience projects have been selected. These have been chosen due to:	£44.6m	-

Improving Public Safety	period and WebTAG 3.5 <u>NPV 2010 £m</u> Scheme Benefits Scheme Costs Scheme Revenue (reduction in cost) Total Scheme Total Scheme BCR	Low Scenario 35.7 61.4 9.1 -16.6 0.7	High Scenario 45.2 61.4 11.4 -4.8 0.9	Provision of materials and events to promote railway safety to the public	-	£0.5m
	 Reduction in likelihood of emergency remedial works required due to weather Reduction of speed restrictions that would be applied during remedial works Reduction in the delay per incident resulting from weather events Safety: Reduction in risk associated with earthworks failures which PIM* data shows represents 5% of total risk to the rail network per annum, as measured by FWI 			 Earthworks at high priority WRCCA (Weather Resilience and Climate Change Adaption) scheme sites targeted to improve the resilience of vulnerable embankments against frequent flooding. Works at sites prone to earthwork sensitivity and embankment instability which are safety critical and have a high disruptive potential. Sites have been chosen based on policy that identifies different levels of earthworks interventions associated with longer term deterioration of the ageing and marginally stable Victorian earthworks asset portfolio. The policy contains a treatment matrix related to Earthworks Asset Criticality Banding (EACB) and Earthworks Hazard Category (EHC). 		

Appendix E CP6 regulatory framework – Other Single Till Income

Table E.1 presents the forecast of income from each regulated charge in CP6. The charging income forecast reflects the latest forecast of CP6 traffic levels and is consistent with the total CP6 income forecast set out in Section 10.

As ORR has not yet concluded on the structure or level of CP6 charges, it is assumed that CP5 (2018/19) access charge rates will continue. However, this does not include a forecast for the Capacity Charge because ORR has already concluded it will not continue in CP6.

Table E.1: Charging income

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Route charging income							
Variable Usage Charge	(20)	(20)	(21)	(21)	(21)	(21)	(104)
Electrification Asset Usage Charge	(3)	(5)	(5)	(5)	(5)	(5)	(25)
Schedule 4 Access Charge Supplement	(20)	(36)	(48)	(41)	(57)	(29)	(211)
FTAC / Grant (SOMR)	(443)	(423)	(500)	(512)	(549)	(453)	(2,436)
Station Long Term Charge	(8)	(6)	(6)	(6)	(6)	(6)	(30)
FNPO Income	0	(62)	(73)	(68)	(78)	(59)	(341)
Charging income allocated to routes							
Electric Current for Traction	(49)	(59)	(67)	(67)	(68)	(68)	(329)
Total charging income	(544)	(611)	(720)	(720)	(784)	(642)	(3,477)

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

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

£m in 2017/18 prices	18/19	19/20	20/21	21/22	22/23	23/24	CP6
Route income							
Managed station QX	(3)	(3)	(3)	(3)	(3)	(3)	(17)
Franchised station lease income	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Open access fixed contractual contribution	(5)	0	0	0	0	0	0
Depots	(7)	(6)	(6)	(6)	(6)	(6)	(31)
Finance charges (e.g. Crossrail)	0	0	0	0	0	0	0
Facility charges	(2)	(2)	(2)	(2)	(2)	(2)	(8)
Other route income	(9)	(0)	(0)	(0)	(0)	(0)	(1)
Income allocated to routes							
Property rental	(29)	(31)	(31)	(31)	(32)	(32)	(157)
Property sales	(33)	(4)	(4)	(3)	(3)	(4)	(19)
Total other single till income	(88)	(47)	(47)	(46)	(46)	(47)	(234)

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

Appendix F Long term forecast







Appendix G Glossary of terms

Abbreviation	Expanded
ABP	Activity Based Planning
ARP	Assurance Review Panel
BCR	Benefit Cost Ratio
CAPEX	Capital expenditure
CaSL	Cancelled and Significantly Late
CEFA	Civil Examination Framework Agreement
C-DAS	Connected Driver Advisory System
CRI	Composite Reliability Index
CSI	Composite Sustainability Index
DPI	Delay Per Incident
DU	Delivery Unit
E&P	Electrification and Power
ELR	Engineering Line Reference
ETCS	European Train Control System
F2N	Felixstowe to North Programme
FDM	Freight Delivery Metric
FEU	Freight End Users
FMS	Fault Management System
FNPO	Freight and National Passenger Operator
FOC	Freight Operating Company
FPM	Financial Performance Measurement
FWI	Fatality Weighted Index
GEML	Great Eastern Main Line
HAVS	Hand Arm Vibration Syndrome
HAW	Heavy Axle Weights
IECC	Integrated Electrical Control Centre

Abbreviation	Expanded
IP	Infrastructure Projects
ISO	International standards on quality management
LEP	Local Enterprise Partnership
LTI	Lost Time Incidents
LTIFR	Lost Time Injury Frequency Rate
MSP4NR	Managing Successful Programmes for Network Rail – Project Management methodology
NRPS	National Rail Passenger Survey
OLE	Overhead Line Equipment
OM&R	Operations, Maintenance and Renewals
OPEX	Operating expenditure
ORBIS	Offering Rail Better Information Services
ORR	Office of Rail and Road
PSR	Permanent Speed Restriction
PIM	Precursor Indicator Model
PDSW	Planning and Delivering Safe Work
PLPR	Plain Line Pattern Recognition
PPM	Public Performance Measures
QHSE	Quality, health, safety, environment
RAMP	Route Asset Management Plan
RDG	Rail Delivery Group
RA	Route Availability
RS	Route Services
RSP	Route Strategic Plan
RSPG	Route Strategy Planning Group
RTD	Right Time Departures

Abbreviation	Expanded			
S&C	Switches and Crossings			
S&T	Signalling and Telecoms			
SAF	Service Affecting Failures			
SFN	Strategic Freight Network			
SOBC	Strategic Outline Business Case			
SPADs	Signals Passed at Danger			
STED	Safety, Technical and Engineering Directorate			
ТМ	Traffic Management			
TOC	Train Operating Company			
TSR	Temporary Speed Restriction			
UTC	University Technical College			
WAML	West Anglia Main Line			
WD	Works Delivery			
Operating Cor	npanies			
ARL	Arriva Rail London (London Overground)			
c2c	c2c Train Operating Company			
GA	Greater Anglia			
GTR	Govia Thameslink Railway			
TfL Rail	Transport for London - Crossrail Train Operator			

Abbreviation	Expanded				
Network Rail Role Titles					
ASPRO	Asset Protection Team				
COO	Chief Operating Officer				
DLR	Director London Rail				
DRC	Director of Route Change				
DRS	Director Route Sponsorship				
DRSAM	Director of Route Safety and Asset Management				
ECRO	Electrical Control Room Operator				
FD	Financial Director				
FNPO CPM	Freight and National Passenger Operators Capability and Planning Manager				
FNPO HSC	Freight and National Passenger Operators Head of Strategic Capability				
FNPO HNM	Freight and National Passenger Operators Head of Network Management				
FNPO OSM	Freight and National Passenger Operators Operations and Safety Manager				
FNPO PM	Freight and National Passenger Operators Performance Manager				
FSDM	Freight Service Delivery Manager				
HCR	Head of Customer Relations				
HOP	Head of Performance				
HORSHE	Head of Route Safety, Health and Environment				
HRC	Head of Route Communications				
IAP	Integrated Planning Team				
RAM	Route Asset Manager				
SIO	Senior Incident Officer				
SRFM	Senior Route Freight Manager				
TME	Track Maintenance Engineer				

Appendix H Regulatory Floor Methodology

CRM-P regulatory floor methodology

The CRM-P floor has been set using a consistent, simple to understand, methodology across all routes to derive a floor which should only be breached when a route is displaying signs of being in systematic failure. The floor has been set on the basis that ORR will first investigate a breach of the floor and check whether the route is doing everything reasonably practicable to manage the relevant issues before taking regulatory action. This recognises that CRM-P can be impacted by extreme events outside the direct control of the railway (including weather) and potentially by major changes in the reliability of TOC operations.

Network Rail is proposing that the floor for the route CRM-P is based on setting a "buffer" which becomes, for the Anglia route, a fixed absolute level of allowed deviation away from the proposed trajectory for each year in CP6.

The buffer is set at 30% of the Period 10 2017/18 value of CRM-P (MAA) for Anglia, which is consistent with all other routes cross Network Rail.

Example of how the buffer is calculated:

- If the current CRM-P for a route is 4.00 minutes: the buffer for the route would be 1.2 minutes (i.e. 30% of 4 minutes)
- If the expected CRM-P in 2021/22 for the route is 3.80 minutes the floor would be set at 5.00 minutes (i.e. 1.2 minutes worse than the trajectory).

This logic keeps the proportional level of failure for all routes similar and follows the current methodology used by the DfT to set Breach levels around the TOC on Self Delay target within the franchise agreements. It does though recognise that confidence in delivery of improvement is slightly less than the confidence of delivering current performance.

The 30% level is between the 25% used by the DfT in the South Western Railway franchise and the 40% proposed by the DfT for the South Eastern franchise. It also aligns to the proposal for the floor on the FDM-R measure for freight performance.

FDM-R regulatory floor methodology

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

Sustainability regulatory floor methodology for inserting into appendix

The Sustainability assurance has identified a small part of the overall plan that can be deferred and remain deliverable in future control periods. The regulatory floor for sustainability is therefore set at this level which has been assessed to be limited to a 10% loss in proposed plan activity across the control period.

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

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

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