

Office of Rail and Road

Review of Network Rail's renewals and
efficiency planning for years 1 and 2 of CP6



Independent Reporter Lot 4
LNE & EM Route Report - November 2019



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1. Introduction

An Independent Reporter review by Nichols was jointly commissioned by the ORR and Network Rail in April 2019. The mandate for the review set out the purpose: “to provide an independent assessment of Network Rail’s preparations to deliver its efficiency planning in the early part of CP6. The review should specifically consider the reasonableness of route’s renewals workbank planning and efficiency plans.”

The review was structured in two phases. Review phase 1 assessed the Scotland and Wessex routes, and a phase 1 report was issued in July 2019. A Stage Gate meeting was held after completing phase 1 to review the findings and lessons learnt. It was agreed to alter the emphasis for review phase 2, within the purpose of the original mandate, as follows.

For renewals:

- Additional emphasis on workbank maturity, notably detailed design and construction stages for year 1.
- Examine progress data captured by routes from delivery teams, agents and frameworks, for example, seeking assurance on remits for delivery, procurement, start of works, progress per GRIP stages.
- Review progress in developing the Leading Indicator process.
- Check risk resilience via over-programming, the approach to possession booking and any key enhancements interfaces.

For efficiencies:

- Reviewing fewer initiatives in more detail.
- Greater emphasis on capital expenditure (capex) efficiencies to explore ownership of delivery of post-efficient costs, robustness of plans and programmes to deliver these, implementation by Delivery Agents and governance and monitoring of implementation.
- Explicit reference to good practice in efficiency (benefits) realisation programmes.



Review phase 2 assessed six routes between July and September 2019; namely Anglia, London North East & East Midlands (LNE&EM), London North West (LNW), South East, Wales and Western.

This is a review phase 2 report that sets out the Reporter's assessment specifically for the LNE&EM route. There are five similar reports for the other routes being assessed in review phase 2. There is also a separate overall review phase 2 report that contains common themes from across the route reports.

The structure of this report is as follows:

Renewals workbank delivery assessment

- Renewals assessment methodology
- Route review context
- Assessment scope
- Assessment findings
- Conclusions and recommendations

Efficiencies plans delivery assessment

- Route review context
- Assessment scope
- Assessment findings
- Conclusions and recommendations

We would like to thank the LNE&EM routes for its cooperation and support during the review, providing a significant body of documents as evidence, professionally managing meetings for the review teams throughout the three day fieldwork phase, and responding to a series of additional clarifications on its renewals and efficiency plans; all of which was undertaken during the transition to Network Rail's new regional structure.

2. Renewals delivery assessment

2.1 Renewals assessment methodology

The Reporter mandate set out a high-level scope:

“The reporter should assess the preparedness of the route to deliver its renewals plan in CP6. This should be based on the latest data in Network Rail’s leading indicators report together with discussion with the route of the implications of the data. Based on its assessment, the reporter should identify opportunities for improving the route’s approach to reporting its preparedness for delivery of renewals workbanks in CP6.”

Renewals Delivery Reference Model (Figure 1 below)

The Reporter’s methodology for assessing preparedness uses a Renewals Delivery Reference Model to provide a structure based on a simplified lifecycle with the following stages:

Stage 1 – Workbank planning

Stage 2A – Authorisation and project development

Stage 2B – Delivery planning

Stage 3 – Design and construction



The model is shown in Figure 1. The lifecycle based structure provides a timescale perspective to assessing delivery preparedness, for example:

For the current financial year (CP6 year 1) – The workbank plan is being actively measured through Stage 3 Design and construction.

For the next financial year (CP6 year 2) – The workbank plan is being actively measured through Stage 2A Authorisation and project development and also Stage 2B Delivery planning.

For later financial years (CP6 year 3 onwards) – The expectation is the workbank plan is being actively measured through Stage 1 Workbank management and Stage 2A Authorisation and project development.

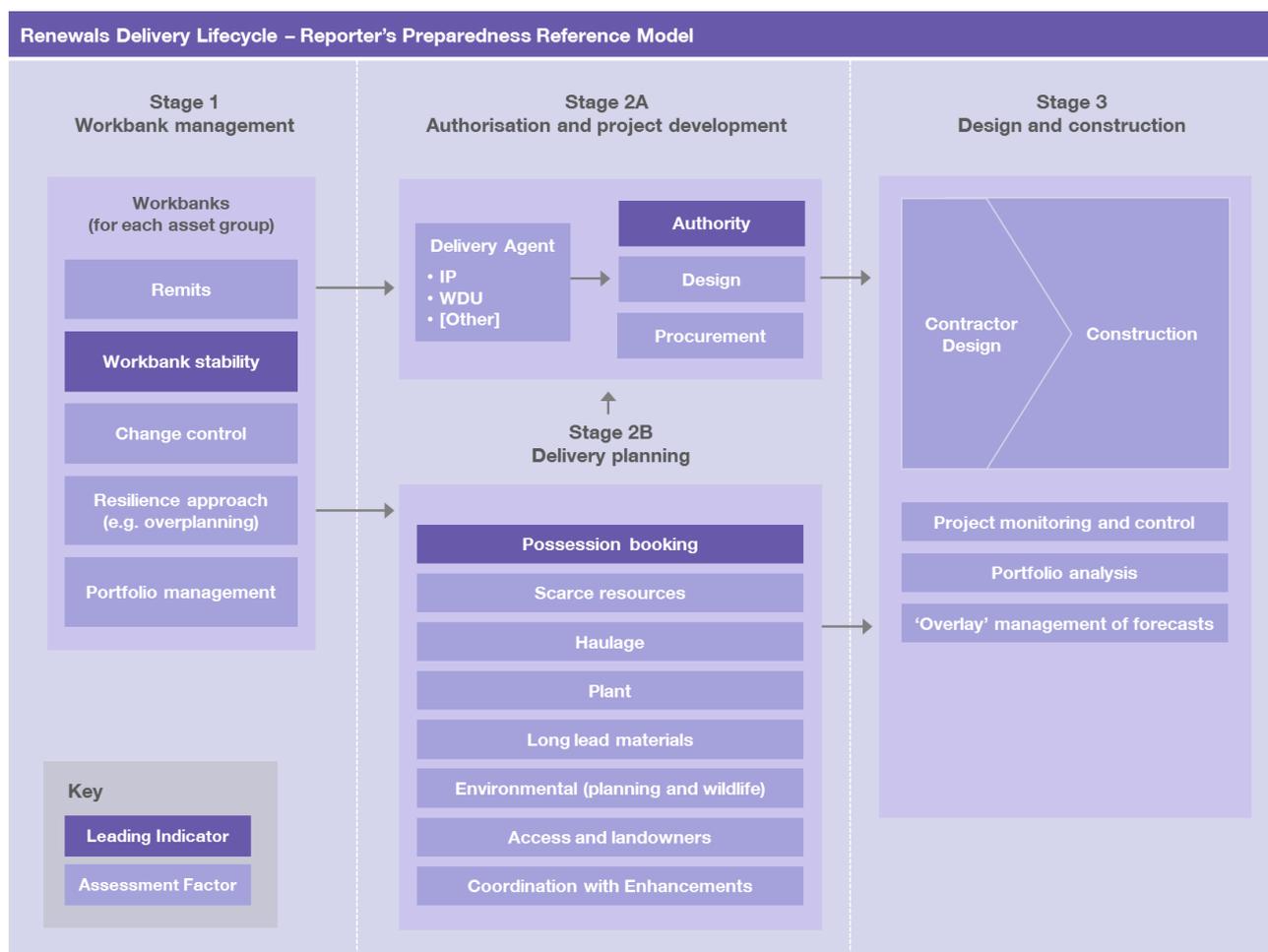


Figure 1: Renewals Delivery Reference Model



Assessment of Leading Indicators in phase 1

During review phase 1 we reviewed the available Leading Indicators; disruptive access, project authorisation and workbank stability. These are provided by each route into Network Rail centre and to ORR as a high-level summary of renewals delivery progress. We mapped the three Leading Indicators against the model to understand their scope of coverage and this is shown in Figure 1.

Our conclusion from phase 1 was that the Leading Indicators provided only a partial view of preparedness and we made a number of recommendations for improvements to indicators and metrics that could be used to provide a more complete picture.

Assessment methodology for phase 2

There was a change in emphasis for review phase 2 and the Reporter focus was on how each route was managing its preparedness for workbank delivery in year 1 (2019/20) and year 2 (2020/21). We examined the metrics and management controls being used by route management teams to assure themselves of workbank delivery. We sought to find evidence of route management and metrics using the model to provide a structure for our assessment:

- 1.** Workbank planning. Workbank stability measures, active use of change control and planning resilience processes like over-planning.
- 2A.** Authorisation and project development. Remit, investment authorisation and procurement progress monitoring and controls.
- 2B.** Delivery planning. Possessions booking, scarce resource management, haulage, plant, long lead materials, environmental progress monitoring and controls.
- 3.** Design and construction. Actual delivery and forecasting against plan, appropriate use of progress monitoring and controls, use of overlay processes to improve the quality of forecast plans, active management of risks.

To undertake a route assessment, we investigated and examined at two levels:

Portfolio – Monitoring and management of the renewals portfolio as a whole, across asset types.

Project – Monitoring and management of a sample of renewals projects from the largest asset workbanks.



The actual scope of the investigation (i.e. the balance between a focus at portfolio and at project level) at each route was determined by the assessment team leader to fit the time available and was designed to ensure both levels were addressed across the route assessments.

2.2 Route review context

The Reporter review of the LNE&EM route was undertaken in August and September 2019, and led for the route by its Route Financial Director (RFD), Director of Route Asset Management (DRAM), Senior Sponsor and Financial Controller (FC).

The route's £2.9bn baseline renewals plan for Control Period 6 (CP6) was established in January 2019 at Rolling Forecast (RF) 11 (Period 11, 2018/2019). It is summarised in Table 1 below, and is broken down in terms of each key asset workbank. Table 1 also shows the route's latest forecast at RF4 (Period 4, 2019/2020).

Asset group	Budget (£m, RF11)	Forecast (£m, RF4)	Variance (£m)
Track	1,016.0	1,016.0	0.0
Signalling	864.0	863.9	-0.1
Structures	434.0	434.4	+0.4
Earthworks	124.0	122.4	-1.6
Buildings	178.0	178.5	+0.5
E&P	238.0	237.5	-0.5
Drainage	53.0	54.4	+1.4
Total	2,907.0	2,907.1	+0.1

Table 1: LNE&EM CP6 route planned renewals spending



Similarly, the route's planned and most recent forecast volumes for CP6 are summarised in Table 2.

Key volume	Unit	CP6 total		
		Plan (£m, RF11)	Forecast (£m, RF4)	Variance
Plain line	km	1,622	1,622	0
S&C	No.	812	812	0
Signalling	SEU	1,424	1,457	+33
Embankment	5cl	4,032	4,035	+3
Underbridges	No.	196	195	-1
Underbridges	m ²	86,707	88,974	+2,267
Wire runs	No.	10	10	0
Conductor rail	km	0	0	0

Table 2: LNE&EM CP6 route planned renewals volumes

2.3 Assessment scope

To assess LNE&EM preparedness to deliver their renewals workbank in years 1 and 2 of CP6, we sought evidence of both portfolio and project level management and control. However, the balance of our emphasis was on a review of sample projects from the key asset group types, as these made up a large proportion of costs and volumes in these years.

Selecting a sample of projects to review

To choose our sample, we considered the top four asset group workbanks that make up over 86% of planned spend in years 1 and 2 of CP6. This is summarised in Table 3 below.

Asset group	CP6 Year 1 (FY20)			CP6 Year 2 (FY21)		
	Plan (£m RF11)	Latest (£m RF4)	Variance (£m)	Plan (£m RF11)	Latest (£m RF4)	Variance (£m)
Track *	192.0	191.5	-0.5	222.0	222.4	+0.4
Signalling *	147.0	147.0	0	182.0	171.7	-10.3
Structures *	53.0	52.4	-0.6	95.0	95.4	+0.4
Earthworks	15.0	15.0	0	27.0	26.7	-0.3
Buildings *	55.0	54.6	-0.4	52.0	52.4	+0.4
E&P	36.0	36.0	0	51.0	50.9	-0.1
Drainage	13.0	13.0	0	13.0	13.0	0
Other	13.5	12.3	-1.2	17.4	17.4	0
Total	524.5	521.9	2.6	659.4	649.9	-9.5

Table 3: LNE&EM route renewals cost forecast compared to plan, CP6 years 1-2 totals
* Denotes asset group sampled in the review

The planned and forecast total volumes for these asset groups for year 1 and 2 are set out in Table 4 below.

Asset group	Unit	Year 1			Year 2		
		Plan	Forecast	Variance	Plan	Forecast	Variance
Plain line	km	202	207	+5	366	367	+1
S&C	No.	116	116	0	205	205	0
Signalling	SEU	70	58	-12	413	432	+19
Earthworks	5cl	515	518	+3	753	753	0
Underbridges	No.	30	31	+1	48	46	-2
Underbridges	m ²	9,856	8,028	-1,828	17,873	19,286	+1,413
Wire runs	No.	10	10	0	0	0	0
Conductor rail	km	0	0	0	0	0	0

Table 4: LNE&EM route volume summary for CP6 year 1-2

We chose a sample of projects based on: high values and volumes; to give a spread across the two main Delivery Agents: Infrastructure Projects and Works Delivery; to give a spread across development and



delivery in year 1 and 2 and; to provide detailed examples and evidence that complement a wider portfolio-level view across the route's renewals plans.

Our sample incorporated the following projects and is summarised in Table 5:

King's Cross Remodelling – The route's current major programme in delivery, covering multiple asset group in years 1 and 2, including all four of the following assets.

Track – The route's LNE High Output campaign and its EM Works Delivery plain line programme in year 1, as well as the King's Cross works in years 1 and 2.

Signalling – The route's two main re-signalling schemes in development, that are for completion in year 2 and year 3, as well as King's Cross programme in year 1 that will be completed at the end of year 2.

Structures – Reviewing a major viaduct project in development as well as a programme to inspect the route's significant number of 'hidden' tunnel shafts.

Buildings – The route's Direct Delivery Team, covering plans to client, specify, procure and delivery new assets differently from CP5.

Project	Asset	Year 1 (£m)	Year 2 (£m)	Stage
19/20 LNE TRS Doncaster (IP High Output)	Track	29.8	-	Delivery
19/20 EMIDS PL (WD Plain Line)	Track	5.0	-	Delivery
King's Cross Re-modelling	Track	14.0	20.2	Delivery
King's Cross Re-modelling	Signalling	19.7	21.0	Delivery
Durham Coast Re-signalling	Signalling	6.6	3.1	Delivery
Middlesbrough/Whitehouse Re-signalling	Signalling	6.9	19.1	Development
King's Cross Re-modelling	Structures	6.2	10.2	Delivery
19/20 Tunnel Hidden Shaft	Structures	6.6	2.4	Delivery
Swaithe Viaduct	Structures	0.3	4.8	Development
King's Cross Re-modelling	Buildings	9.2	15.1	Delivery
Doncaster DU Improvement	Buildings	8.9	0.2	Delivery
Barnetby DU	Buildings	0.5	2.7	Development

Table 5: Summary of sample projects (note that Kings Cross packaged as one sample project covering multiple assets)



2.4 Assessment findings

We assessed a substantial body of evidence provided on the planning, management and delivery of its renewals workbank, primarily focused on years 1 and 2 of CP6, with good evidence of detailed knowledge, ownership of and commitment to delivery across Route Asset Manager's (RAM), finance, sponsor and delivery teams. Our findings are presented using the Renewals Delivery Reference Model structure described earlier and with supporting examples from our review of sample projects.

Model Stage 1 – Workbank planning

The LNE&EM route presented an overview of its CP6 workbank that was developed in later years of CP5, and consistent with its Route Strategic Plan (RSP). This includes a number of major projects and programmes, the development work for which was already underway before the start of CP6, providing confidence in preparedness, for example its High Output track campaigns and the £260m King's Cross Remodelling (renewals) project.

The main commissioning blockade for King's Cross was planned for December 2019 to March 2020 on the assumption that the Thameslink (enhancement) programme would enable 24 trains per hour (tph) operations by then, to support the train services required during the blockade. Following 2018 rail industry timetable issues this was considered unachievable, so in late 2018 the industry board overseeing this confirmed that the blockade would be slipped 12 months. The impact on King's Cross Remodelling project costs was reflected in the baseline plan for CP6 years 1 and 2. The route confirmed, however, that the volumes were not adjusted to reflect this change, hence the variance noted in Table 4. Therefore, this is a timing issue and also a reporting error, not an unplanned slippage of the project and associated volumes.

The costs and volumes for all projects are defined individually and aggregated by asset type in the route's financial reporting system. The profile of work over CP6 does not indicate that there are obvious deliverability risks as it is reasonably uniform per asset group over the five years. Year 1 spend is the lowest. The peak spend is in year 2, due to the scale of King's Cross Remodelling works. Year 3 is only slightly lower than year 2, reflecting a major High Output track campaign scheduled then.

The route makes explicit use of overplanning provisions per asset group in its renewals planning. For example in High Output track replacement, 35km of work is budgeted but 42km has been identified and planned as a volume overplan in year 1. As with all routes, this overplan is accounted for via a series of financial 'overlays' that reconcile to the route's annual budgets. Overplanning enables it to proactively manage risk or change across its portfolios within each workbank, for example if projects change, schedules slip, to respond to unplanned (reactive or emergency) works, or to respond to shortfalls across other asset plans by outperforming on others.



Within LNE&EM, this overplan is equivalent to 10% overall, with its strategy for this defined on a bottom-up basis per asset group. This is summarised in Table 6. This includes works remitted to Delivery Agents but not included in the baseline plan, financial 'overlays' to account for overplanning, 'emerging cost overlays' as allowances that enable the route to neutralise Financial Performance Measure (FPM) impacts for works that emerge through the year, and a £17m contingency sum (with a forecast breakdown provided for allocation of this).

Asset group	Budget (£m)	Forecast (£m)	Overplan (£m)	Overplan (%)
Track	178.5	191.4	12.9	7%
Signalling	147.0	163.8	16.8	11%
Structures	53.0	60.9	7.9	15%
Earthworks	15.0	17.0	2.0	13%
Buildings	54.6	64.2	9.6	18%
E&P	36.0	36.0	36.0	0%
Drainage	25.9	26.7	0.7	3%
Other	14.4	12.3	-2.1	n/a
Total	524.5	572.3	49.8	10%

Table 6: LNE&EM route overplan summary for CP6 year 1

We did not find evidence of notable instability and change, including in the sample projects we reviewed.

Network Rail's national Leading Indicator report has put LNE&EM's workbank stability at between 80% and 83% to-date, which demonstrates that there has not been notable change period-on-period in year 1¹.

Model Stage 2A – Authorisation and project development

Authorisation levels are a key indicator of the route's preparedness to deliver its renewals plans. We saw a good evidence of governance over authorisations at project and at asset level to demonstrate good focus on delivery to cost and volumes in discussion with RAMs and sponsors. The route's governance and management system assurance arrangements include:

¹ This indicator includes a central assumption of 20% overplanning in input data, hence is indicative where 100% is not necessarily the maximum or 'target'.



- Monthly Business Review (MBR) meetings at DRAM, SRAM and Route Director level, with MBR packs for major schemes (for example King's Cross Re-modelling).
- Periodic Business Review (PBR) meetings between DRAM and RAMs; a Director review covering progress, works forecasts, access, risks and opportunities, overlays, new works, change and slippage; supported by route finance data on these.
- Routine renewals planning and progress meetings between RAMs and Delivery Agents in each asset group and for major schemes with bespoke governance arrangements.
- Investment Panel submissions. We reviewed a number of these for key sample projects.
- GRIP Stage Gates.
- Established processes for financial reporting and tracking delivery to budget per reporting period, including FPM and rolling forecasts and deep-dive review of costs.

To complement the above, we also saw that the LNE&EM actively maintains control rooms at asset (RAM) and at portfolio (DRAM) level, which contain comprehensive visualisation content. This includes data to monitor its performance in year 1 and 2 across all of its asset groups, and further split by LNE and EM business units for track and signalling. Metrics tracked include the value of projects logged in the financial system compared to target, authority compared to target, the number and value of remits issued and accepted in each discipline, and the amount and authorisation of disruptive access progress. We considered this good practice to acknowledge within our overall report findings.

The route was 86% authorised overall for year 1 works as at Period 5, with the balance representing remaining LNE track and also LNE signalling projects not yet planned to be fully authorised.

LNE&EM has already authorised 23% of works planned for year 2, as at Period 5. This includes high levels of authority in signalling, E&P and buildings asset groups. The levels of track authorisation is lower, but is planned to reach Investment Panel later in the year 2019 as part of the route's authorisation strategy (noting that High Output work is planned for the latter part of year 2).

The route evidenced that it operates a change control process to manage adjustments and inform re-authority processes. This indicated low levels to change to date in year 1; and we did not find evidence of notable changes experienced in the sample projects.



We assessed LNE&EM's development work and progress for sample projects, for example:

King's Cross Remodelling – This major project has been in development since CP5. It has inherent development maturity because the main commissioning has been re-schedule to the end of year 2. The project team are working to get to the end of GRIP stage 5 almost a year before that blockade, which should help to mitigate stated design and schedule risks that could otherwise be problematic.

Track – Clear plans were evidenced of the route's Infrastructure Projects (IP) and Works Delivery plans, notably the IP High Output campaign and programme management approach to align engineering, access and plant requirements. The year 1 programme was authorised in March 2019, with ballast cleaning underway during our review and the main track replacement programme (part of our sample) developed ahead of commencement in Period 8 through to the end of year 1.

Signalling – The route's plans include Durham Coast Re-signalling that was progressed to GRIP stage 4 in late CP5, so benefits from good development maturity. The project is now in delivery, for completion in year 2. The Middlesbrough/Whitehouse Re-signalling scheme has also been successfully developed and awarded as planned, and is also at GRIP stage 4 development, with completion in year 3. The route's development work also includes a commitment to a new signalling system to drive market competition and resilience. We saw evidence of collaborative working across route, IP and suppliers to drive cost efficient development work, plus shared use of contingency within Target Cost contracts to drive the right behaviours across all parties.

Structures – The route's strategy is to remit and develop the workbank for multiple years, to enable projects to be brought forward earlier and faster by a dedicated capex renewals team. It has remitted 77 of 81 structures in years 1 to 3, with Early Contractor Involvement (ECI) and the Risk Management Maturity (RMM) model used as framework to ensure development focus on cost, risk and efficiencies. It then plans develops and authorises delivery (GRIP stage 5 to 8) into smaller packages. The Swaithe Viaduct scheme we sampled is one of the few projects not yet remitted. We saw updated plans for this project, including impending remit and GRIP stage 5-8 authority by RF11; with completion slipping from year 2 to year 3.

Buildings – The route has established a Direct Delivery Team to client development and delivery, promoting a strategy to improve supply chain innovation, contestability and access for Tier 2's and non-traditional rail firms. This includes Delivery Unit projects at Doncaster and Barnetby that are in development, with delivery dates slipped from year 2 to year 3 for the latter to enable it to pursue its chosen strategy.



Model Stage 2B – Delivery planning

We looked for evidence and assurance on delivery planning and any instances of unmitigated dependency or risk in relation to, for example, disruptive access, scarce resources, specialist plant, haulage, materials, land access and interdependencies with enhancement schemes.

Access – The route has secured its access for year 1 and part of year 2, in line with industry processes. We saw evidence in the form of detailed access ‘box’ plans that have been established for key projects, and of TOC and FOC access meetings by the Area Planning Team every eight weeks to oversee development of these. For example, King’s Cross Remodelling, includes a programme of 54 hour possessions throughout year 1 and 2, leading to its main three-month blockade comprising two consecutive half-station closures.

Haulage, plant and long lead materials – This is managed centrally by Supply Chain Operations (SCO). We did not identify any risks in evidence provided by the LNE&EM route.

Resources – We saw evidence of continuity in the supply chain providing stability and confidence in track and signalling workbank delivery. The route tracks its forecast requirements for signal testers compared to availability and shared details of a national Engineering Resources Review by its signalling system provider.

Land – We saw evidence that relevant risks are being highlighted managed, for example at King’s Cross (adjacent landowners), the sampled structures survey and renewals and repair schemes, and in relation to level crossings for re-signalling schemes. None of these appeared as significant. For track High Output delivery plans, the route proactively undertook site surveys, ground investigation, structural reviews and environmental assessments to de-risk its designs and delivery plans.

Enhancements – No key interface risks due to enhancement projects were identified in evidence, noting that the previously agreed amendments to timescales for the King’s Cross Remodelling scheme reflected the impact of the Thameslink Programme.

Model Stage 3 – Design and construction

We reviewed the route’s documentation on design development, although did not assess design quality within this review. We saw evidence of work undertaken via GRIP, notably in the major signalling schemes and building projects sampled, and as scheduled as standard within Investment Panel papers.

The route has robust supply chains and frameworks to underpin procurement plans, with only minor changes since CP5. This includes new framework contracts for CP6 which it reports are better aligned to its workbank than in CP5.



We looked for evidence of variances in renewals costs in year 1, as summarised in Table 7.

Asset group	Year 1 to date (P04)			Year 1 forecast total		
	Budget (£m)	Actual (£m)	Variance (£m)	Budget (£m)	Forecast (£m)	Variance (£m)
Track	39.3	46.9	+7.6	178.5	178.3	-0.2
Signalling	37.3	26.5	-10.8	147.0	147.0	0
Structures	9.4	10.8	+1.4	53.0	52.4	-0.6
Earthworks	2.7	3.4	+0.7	15.0	15.0	0
Buildings	20.1	15.1	-4.9	54.6	54.6	0
E&P	8.5	6.5	-1.7	36.0	36.0	0
Drainage	5.4	4.8	-0.6	25.9	26.1	0.2
Telecoms/Other	4.5	1.9	-2.6	14.4	12.3	-2.1
Total	127.1	116.3	-10.9	524.5	521.9	-2.6

Table 7: LNE&EM route cost performance CP6 year 1

The route flagged variances in spend to date compared to plan, that it is managing and reporting explicitly. These are evident in Table 7, notably:

Track – £7.6m overspend to date; due to better progress than anticipated (no slippage and use of overplan) plus projects completed early.

Signalling – £10.8m underspent to date; due to short-term impact of the phasing of renewals versus DfT Digital Railway funding, plus a delayed start to projects when viewed at a snap-shot in Period 4.

Buildings – Underspend due to slippage to start dates, small overspends and spend profile changes for new Delivery Unit facilities and station costs for a number of small schemes; due to contract, schedule and access issues, where overplanning has offset some of this variance.

We note that these and some other smaller variances tend to balance out, and that the route is forecasting to close the gap as the short-term issues encountered in Period 4 are progressively resolved.

LNE&EM route's overall position in terms of volumes in delivering its CP6 workbank in year 1 to-date is summarised in Table 8. This compares progress to its approved 'RF11' baseline plan with its progress as at Period 5. This shows that the route is on target and no notable variances have been flagged.



Asset group	Unit	Year 1		
		Plan	Actual	Variance
Plain line	km	70	70	0
S&C	No.	22	24	+2
Signalling	SEU	0	0	0
Embankment	5cl	515	518	+3
Underbridges	No.	0	0	0
Underbridges	m ²	4,861	4,850	-11
Wire runs	No.	10	8	-2
Conductor rail	km	0	0	0

Table 8: LNE&EM route volumes delivered to date in CP6 year 1, as at Period 5.

At the end of our review (Period 6) the route had broadly delivered its plans, which represented good evidence of progress in year 1 renewals plans. Some specific examples of progress within the sample we reviewed:

Track – Good and detailed evidence of delivery progress and management control by Works Delivery to date, at 4.37km Plain Line and which had outperformed post-efficient target rates. IP delivered High Output works had also delivered to plan, albeit with limited instances of lost volume due to access issues.

Signalling – Durham Coast Re-signalling is in delivery as planned, ahead of completion and commissioning in September 2020, so no signalling (SEU) volumes are planned until year 2 for this project, and indeed is the case for King's Cross.

Buildings – There are signs of cost and scope creep and also delivery challenges evident in the route's reporting in a number of its building projects. While these are relatively small, this suggests there are risks to delivery year 1 cost and volumes, with some slippage expected into year 2 delivery and outputs.

King's Cross – As evidence of renewals delivery, we met the team who had successfully completed a major package of work for this project and other packages that weekend, including:

- Renewal of signalling at King's Cross, and transfer of signal control to the new Rail Operating Centre (ROC) in York.
- Modification of overhead power lines and track at King's Cross.



- Renewal of the Newark flat crossing on the East Coast Main Line (ECML) where Nottingham to Lincoln lines cross.
- Track renewal work in Cambridgeshire, and power supply upgrade work near Doncaster.
- Enhancement works for a new platform and electrified railway at Stevenage.

Leading Indicators

We also assessed the status of LNE&EM route in relation to Network Rail's Leading Indicator Report that provides standard measures of route preparedness for renewals delivery. No issues were identified, noting as headlines:

- Year 1 financial authority is ahead of plan, reported at 86% at Period 5, which is slightly higher than the all-route average reported then.
- Disruptive access is confirmed for year 1, noting that this leading indicator captures all disruptive access requirements including maintenance and enhancements, not just renewals.

2.5 Conclusions and recommendations

In this section we set out our key conclusions and related recommendations for the LNE&EM route. It is important to note, however, that these will also be considered in overall terms across phase 2 of this review, to ensure that these are aligned, as far as is appropriate, across all of the routes and regions.

LNE&EM route conclusions

Preparedness to deliver in years 1 and 2

LNE&EM route has demonstrated good evidence of its plans and preparedness to deliver its renewals in year 1 and 2 of CP6. It provided a comprehensive body of evidence on its workbank development and on the up-to-date status of development and delivery of these plans, and specifically in its major projects in its largest track, signalling, structures and buildings workbanks.

The route has provided evidence that demonstrates that it is currently on target to deliver its renewals costs and outputs (volumes) for year 1; it is currently ahead of plan in track, though with risks to buildings but that are within the tolerances of the route's overplanning provisions. It is also progressing plans for year 2, with development work and authorisation to continue throughout year 1.



We found good evidence of the management systems being operated that provide confidence that the route should prepare and deliver its year 1 and 2 renewals targets. This includes evidence of cost and delivery focus across leadership, RAM, finance and delivery teams. This was supported by a strong 'control room' ethos and focus on performance metrics.

Overlay adjustments

Overplanning is an important and effective part of the route management system, used to ensure resilience and mitigate risk that some projects may be delayed or change. A series of financial 'overlays' used to manage and monitor overplanning, emerging work and to reconcile costs to agreed budgets. No significant issues were identified in relation to this process within LNE&EM. Given the scale and dynamic nature of the renewals portfolio, this process needs careful active management and a professional assessment of progress, potential optimism, risk and change every reporting period.

Remits for delivery

The issue of remits by the route and the acceptance of these by its Delivery Agents is an important part of workbank planning and project development. It is positive that this is being tracked by the LNE&EM routes, as control rooms evidence, as this is a useful metric to indicate progress in securing approvals for renewals development and delivery that is not part of the current Leading Indicator process.

Workbank change

Change to baseline plans (in terms of cost and volumes) is inevitable on what is a very large renewals investment programmes, valued at £2.9bn in CP6, and over £1.4bn in years 1 and 2 alone. We did not see evidence of a significant level of change in LNE&EM's route renewals plans in year 1 to date, that would indicate a threat to delivery of its overall commitments. We did find some limited instances of changes at an individual asset level, comprising planned change as well as unplanned slippage. The level of change could import risk to delivery of plans or impact on workbank stability and efficiencies, although this did not appear to be a major risk for the LNE&EM route when assessed at the time of the review.

Delivery variances

Overall renewals delivery progress to date is broadly in line with baseline plans for year 1. There are only very limited variances in terms of costs and outputs that were tracking below forecasts that would give cause for concern. These are offset by positive variances in some asset groups.



Risks to delivery

There is evidence of a strong risk management focus within the LNE&EM route, including within the various teams we met who are leading the sample projects we assessed. We note that the route is leading several complex and challenging programmes and projects. There are risks that may potentially fall outside the tolerance that the management system and plans (overplanning and overlays) could cope with; so evidence of progress and preparedness when viewed mid-way through year 1 does not provide a guarantee delivery of costs and volumes for all of year 1 and 2.

These risks may include:

- Unforeseen cross-route access impacts. For example, national prioritisation of access in late year 2, which could impact on the route's crucial King's Cross Remodelling programme plans.
- Unplanned impact from a major enhancement scheme. For example, as the route itself was affected by timescales for The Thameslink Programme, although no evidence of this was identified at the time of our review.
- Loss or reduction of major blockade access, causing work to be deferred. The route is leading several complex projects, notably its two upcoming re-signalling schemes, where schedule risks still remain.
- Potential resource impacts. For example, scarce resource impacts and planned devolution of IP Track into the Regions, noting that the route is managing a tapered transition to mitigate this.
- External market factors. For example, the failure of British Steel on the route's track renewals campaigns.
- Major asset failure. High impact low probability events, for example, exceptional weather events.

The King's Cross Remodelling scheme is an example of this cautionary point on risks to delivery. We saw good evidence of the route's plans for this project and witnessing successful delivery of works during a possession during the review. However, this scheme comprises a major programme of work and disruptive access throughout years 1 and 2, culminating in a three-month blockade of the station from December 2020 to March 2021, which is a major event for the LNE&EM route and its year 1-2 renewals programme.

Leading Indicators

Good progress has been made by Network Rail with establishing the Leading Indicator process to give confidence in year 1 and 2 workbank plans, including in relation to year 1 and 2 data provided by the LNE&EM route. We have concluded that there remain some generic issues to resolve with this process and data, which the Network Rail centre team are aware of and are considering. These aspects are summarised in a separate phase 2 summary report setting out key themes emerging across all routes.



LNE&EM route recommendations

The following recommendations are made for the route, combining:

- Recommendations presented in the Draft Report, based on the route specific conclusions discussed above.
- Recommendations arising from a cross-route consistency check, which we believe are also applicable to this route.

Preparedness to deliver in year 1

At the time of the review (Period 4-5), overall renewals delivery progress to date and full year forecasts for year 1 are reported as being broadly in line with baseline plans. Our findings and conclusions, discussed above, indicate a number of areas of risk to delivery in year 1 and we make the following recommendations:

Recommendation R1 – That the route heightens monitoring and assurance of delivery plans for asset groups that report a variance in terms of financial or volume performance compared to forecasts outputs. Should variances only emerge later in year 1, they may not be resolvable before year end.

Recommendation R2 – That the route monitors the consistency and transparency of overlay adjustments, to mitigate potential optimism and risk of changes emerging that could be hard to mitigate at late in year 1, and in subsequent years.

Recommendation R3 – That the route closely monitors, and informs ORR by exception, on the following strategic threats that are likely to be outside the tolerance of risks they can mitigate and therefore would impact on achievement of year 1 targeted levels of renewals:

- Supply chain issues given the uncertain economic situation
- Impact of the completion of the IP transition into the routes, specifically IP Track
- Loss or reduction in major blockade access

Preparedness to deliver in year 2

The route already collates and monitors progress against remit delivery and therefore we have not made a specific recommendation for this. To note though that we have recommended Network Rail centre provides guidance to enhance consistency of remit tracking across the routes.



Recommendation R4 – That the route closely monitors, and informs ORR by exception, on the following strategic threats that are likely to be outside the tolerance of risks they can mitigate and therefore would impact on achievement of year 2 targeted levels of renewals:

- Continuation of supply chain issues given the uncertain economic situation.
- Impact of changes arising from development activity on enhancement projects, as happened with the Thameslink programme previously.
- Changes to the three-month blockade assumptions for the Kings Cross Remodelling programme arising from national priorities.

Leading and route progress Indicators

We have recommended to Network Rail centre further enhancements to the Leading Indicators in our overall phase 2 review summary. Based on the findings and conclusions discussed above, we recommend that the route considers developing more progress indicators for their own use in the following areas:

1. Quantity of change to workbanks confirmed via route change control, which could supersede the workbank stability Leading Indicator, supported by a limited number of categories of change to differentiate reasons for these. For example, positive change to deliver efficiencies as distinct from unplanned slippage.

Recommendation R5 – That the route implements a measure or metric for reporting the quantity of changes to plans at asset level, supported by an analysis of the causes and categories of change and the risks to and mitigation of impacts on renewals targets. The lessons from these changes should also be embedded in future workbank plans to reduce the volume of future change.

2. Tracking the level of financial overlays within the financial year. This would provide visibility of this aspect of financial reporting and assurance that they are reducing in line with plans as forecasts are replaced by confirmed plans and costs.
3. Measure or metric for the variance between forecast and actual delivery per asset group, in terms of volume and expenditure; hence a 'lag' indicator to provide assurance of delivery within each year and highlight areas for improvements.

Recommendation R6 – With the appointment of a Regional Capital Programme Director, the opportunity is taken to review and improve the quality and consistency of management data across all Delivery Agents. Work to do this should be coordinated with the other recommendations in this report.



3. Efficiencies delivery assessment

3.1 Efficiencies preparedness assessment approach

Introduction

In March 2019, ORR confirmed its assessment that Network Rail was better prepared to deliver efficiency improvements in CP6 than it was at the start of CP5. Our Independent Reporter mandate was commissioned to further assess preparations and progress being made to deliver these plans at route level.

The mandate for the Reporter set out a high-level scope:

“The reporter should assess the preparedness of the route to deliver efficiency savings in the first two years of CP6. This should consider whether the routes have credible efficiency plans both in terms of the estimates of savings that will be achieved and plans for delivery.”

To assess the preparedness of a route to deliver efficiency savings, the Reporter took a similar approach to the renewals assessment, and examined the reasonableness of the route's management system of planning, monitoring and controls of efficiency delivery. We interpreted reasonableness as meaning proportionate to the challenges and risks associated with efficiency delivery. We found in review phase 1 that efficiencies varied in terms of the scale of challenges and risks, therefore we concluded that a 'one size fits all' approach to an efficiency delivery management system should not be the expectation.

For simplicity, we sought to characterise efficiencies into a small number of categories to reflect different points on a scale of size of challenges and risks to delivery. We did this so that we could define our expectations of what is reasonable for each of the categories i.e. the further up the scale then our expectations of the efficiencies management system being higher.

Efficiency delivery landscape

To explain this further, it is necessary to describe the landscape surrounding delivery of efficiency plans and some of the inherent challenges and risks.



As part of the Strategic Business Planning (SBP) process for CP6, each Network Rail route committed to efficiency savings. Network Rail centre provided a 'fishbone' framework of categories to provide consistency in the articulation of efficiency initiatives. The routes were responsible for forecasting cost savings from each initiative which were either derived as:

1. 'A 'top-down' estimate. Largely based on asset manager expert engineering adjustment to pre-efficient costs, which were the subject of financial analysis of workbanks, in some cases supported by external expertise and modelling. The estimates may also have been subject to discussion and agreement with the relevant Delivery Agent (IP or Works Delivery).
2. 'A 'plan-based' estimate. Derived from an early understanding of a delivery and change approach which may be supported by an outline plan and assumptions'.

'Top Down' estimates in the SBP efficiencies plan were therefore effectively 'initiative targets' to be developed subsequently with implementation plans. The initiative targets were then aggregated and apportioned as post-efficient cost targets:

- For capex, to asset groups, initiatives and then deliverer agents based on the amount of work (and work type) they planned for CP6. Delivery Agents subsequently and continue to assign post-efficient cost targets to projects.
- For operational expenditure (opex), where this estimating approach has been used the targets were allocated across departments or units in the organisation structure; which are then effectively the projects that will deliver the efficiencies.

The consequence of the top-down process is that responsibility for efficiency delivery planning moves to 'project level' and is more challenging:

- Each project has to plan for how it will deliver its allocated post efficient savings target. That may require the project to implement multiple different efficiency initiatives, each requiring its own implementation plan. i.e. the number of implementation plans required to deliver the original SBP 'initiative target' has multiplied.

In contrast to other efficiency initiatives where responsibility stays at a programme, deliverer or delivery unit level that will require one implementation plan to deliver one initiative.

- Efficiencies forecasts are developed at project level on an emergent basis as projects are developed.
- On-going reconciliation of project level emergent efficiency forecasts is required with the original 'top down' targets and fishbone categories, in order to reconcile against the Efficiency Tracker and provide assurance that efficiencies will be realised.



The risks to delivering the efficiencies plan are also greater due to:

- The responsibility for delivery of efficiencies has effectively been delegated and distributed across the routes Delivery Agents (IP or Works Delivery) and their project managers i.e. it is now dependent on more people to achieve.
- A project manager could now be responsible for embedding several efficiency initiatives to achieve their overall target cost savings. i.e. their understanding and competence required has now also increased.
- The level of complexity of embedding an initiative into a project varies:

'Simple' – The efficiency initiative has already been enabled by others and there is minimal activity or change required to implement it in a project.

'Not simple' – The efficiency is still to be enabled by the team or others and requires explicit activity or change by the project to implement it. For example, 'challenge standards', 'change scope' is up to the project manager to deliver and enable.

- The efficiency forecasts emergent from developing project efficiency delivery plans may not aggregate up to achieve the overall efficiency targets.

Efficiency categories

Building on an understanding of the challenges and risks set out above, and for the purpose of setting out our expectations of a proportionate Efficiencies Management System, we have defined the following categories of initiatives:

(A) – Capex, minimal (or completed) enabling activity. For example, Contract Rate Reductions.

(B) – Capex, requires considerable enabling activity to implement in a project. For example, Possession Utilisation efficiencies.

(C) – Opex, minimal enabling and implementation activity. For example, SCO Rate Card efficiencies – Haulage.

(D) – Opex, requires considerable implementation effort. For example, Organisation Restructure.



Efficiency Management System expectations

We see routes' Efficiency Management Systems as comprising attributes at three levels:

'Project level' – A project is the means by which efficiencies are realised. For example, savings achieved by an individual Oracle Project.

'Initiative level' – Where changes necessary to realise efficiencies are designed, developed and change enabling outputs (enablers) are delivered. Projects use enablers to make their changes to realise efficiencies. For example, where an efficiency initiative can be applied to multiple projects such as Optimisation of Access.

'Portfolio level' – Where overview, coordination and assurance of multiple projects and initiatives happens.

Our expectation is that the level of planning and management at 'project level' and 'initiative level' is proportionate to the size of the challenge and risk associated with delivering efficiency targets. We defined efficiency categories A to D above to reflect varying levels of challenge and risk associated with different initiatives. In Table 9 below, we have defined our expectations of planning and management features at both a 'project level' and 'initiative level' for each of the four categories A to D. Routes overall efficiency plans will comprise all four categories and therefore we have also defined our expectations of features at 'portfolio level' as common to all four categories. If an initiative is comprised of sub-initiatives, then the category can be applied at the lower level. When we are examining our samples of different efficiencies at a route we will seek evidence of these features and that they are being used appropriately.

Efficiency Management System feature	Capex		Opex	
	(A) Low	(B) High	(C) Low	(D) High
Category degree of enabling and implementation complexity				
Project level:				
1. Efficiencies delivery plan (note 1)				YES
2. Efficiencies forecast documentation (note 2)	YES	YES	YES	YES
3. Post implementation review of actual efficiencies achieved (benefits realisation)	YES	YES	YES	YES
4. Change management plans (note 5)		YES		YES
Renewals Initiative level:				
5. Initiative delivery plans (note 3)				
6. Initiative forecast plans (note 4)	YES	YES		
7. Initiative change management plans (note 5)		YES		

Efficiency Management System feature	Capex		Opex	
Category degree of enabling and implementation complexity	(A) Low	(B) High	(C) Low	(D) High
Portfolio level: (asset group, Delivery Agent, route)				
8. Validation of emergent efficiencies with forecast targets (traceable to fishbone tracker line items)				YES
9. Assurance function to assess project/initiative efficiency level delivery	YES	YES	YES	YES
10. Portfolio Management / Change Management support (note 6)	YES	YES	YES	YES

Table 9: Proportionate planning and management of efficiency delivery by initiative category

Notes on the Table:

- Efficiency delivery plan for each project, for every initiative should include (as a minimum):
 - Description of efficiency initiative (granular level of business change) and rationale
 - Description of how it will generate efficiency
 - Action plan and implementation plan with milestones and dates for enabling efficiencies
 - Identified risks with corresponding mitigations
- Efficiency forecast documentation for each project. We would expect to contain forecast calculation with underpinning detail, record of assumptions, rationale and time phasing.
- Efficiency enabler delivery plan. We would expect to see resources assigned, and should include (as a minimum):
 - Description of efficiency initiative (granular level of business change) and rationale
 - Description of how it will generate efficiency
 - Action plan or implementation plan with milestones and dates for enabling efficiencies
 - Identified risks with corresponding mitigations
- Initiative forecast plan. We would expect to contain forecast calculation with underpinning detail, assumptions, rationale and time phasing.
- Feature 7 is required to ensure that all the change management enablers are being delivered at the 'initiative level'. These enablers will be used at project level to underpin their change management plans, Feature 4. Where required, change plans should be supported with adequate resources to assist implementation.



6. Change management support for the project level to implement common changes across their portfolio, including owning and disseminating good practice, organising training and knowledge sharing.

3.2 Route review context

To assess the preparedness of the route to deliver efficiency savings in the first two years of CP6, the review considered the routes' latest opex and renewal (capex) efficiency plans. We reviewed the overall quality of these plans, whether the efficiency forecasts appear reasonable based on those plans, and whether they are consistent with the routes' agreed allocation within the £3.1bn total of efficiencies within the ORR's final determination for CP6.

Our review of the LNE&EM route was undertaken at the end of August 2019. It was led for the route by its RFD, DRAM, FC and evidenced through meetings and documentation from RAMs (for capex efficiencies) and initiative owners (for opex efficiencies). For key reference forecast data, we reviewed the route's Period 4 2019/20 (RF4) efficiency forecast relative to the RF11 baseline efficiencies agreed as a result of the final determination.

3.3 Assessment scope

Our review focused on 'material efficiencies' as per the mandate and for consistency of our approach across all routes we adopted the sampling principles of selecting the:

- Top three capex efficiencies by value for years 1 and 2, plus assessing relevant efficiencies identified from our review of renewals describe previously.
- Top three opex efficiencies by value for years 1 and 2.

Table 10 shows the sample we reviewed with the forecasts shown as at RF4 in year 1 of CP6.

Category	Type	Initiative	Asset	Efficiency (£m)						% of year 1 + 2 opex / capex
				FY20	FY21	FY22	FY23	FY24	CP6	
A	Capex	Improved contracting strategies/rates (inc. packaging of works)*	Signalling	13.9	9.3	2.5	2.4	3.7	31.8	23%
B	Capex	Early Contractor Involvement, early scope definition, and use of minimum spec. solutions**	Buildings	5.1	3.5	3.6	2.9	1.3	16.3	8%
A	Capex	Stable workbank	Track	6.5	7.4	7.4	6.1	7.2	34.6	14%
A	Capex	SCO initiatives	Track	2.9	3.3	3.3	2.7	3.2	15.4	6%
D	Opex	II (CP6) - Intelligent Infrastructure	Maintenance	0.0	3.0	4.9	6.5	8.2	22.5	11%
C	Opex	Improved contracting strategies/ packaging/ rates	Operations	3.8	3.5	3.5	3.5	3.5	17.9	27%
C	Opex	SCO Initiatives	Support	1.9	3.7	4.4	5.6	6.8	22.4	20%

Table 10: LNEEM route CP6 P04 efficiency sample

* This was sampled via two projects; Durham Coast Re-signalling and Middlesbrough Whitehouse Re-signalling.

** This was sampled via a portfolio of Works Delivery buildings projects.

3.4 Assessment findings

We have set out our findings using the structure from the mandate:

- Quality of the description of business change and how it will generate efficiency
- Calculation of the forecast efficiency
- Arrangements for monitoring progress in implementing business changes
- Approach to risk identification and management
- Identification and documentation of limitations in forecasting and lessons learnt in efficiency plans



a. Quality of the description of business change and how it will generate efficiency

In assessing the quality of business change descriptions, we took into consideration the proportionality principle recognising that some initiatives rely on business change to realise efficiencies and others do not. For example, a new contract framework (Category A) has minimal reliance on business change compared with implementing new maintenance technology and associated work practices (Category D). However, our review still sought evidence of documentation for all initiatives as to how each will generate efficiencies and what actions are required to enable and release efficiency benefits.

In our selected sample of efficiencies for this route there was one Category B and one Category D initiative which require, or potentially require, business change and therefore need descriptions of that business change and how it will generate efficiency. The following are findings on the quality of business change description focusing on the Category B and D initiatives from our sample.

We found variations in the quality and level of detail of the description of business changes and how they will generate efficiency. The route presented information describing changes to give confidence that efficiencies plans are all well founded, however there was variation in the quality and level of detail of the description of business changes and how they will generate efficiency for Category B and D initiatives.

- **Early contractor involvement, early scope definition, and use of minimum specification solutions (Category B).** Within the buildings workbank the route has set up a Direct Delivery team to contract delivery via a wider 'non-rail' tier 2 supply chain early to provide suitable working conditions and pursue efficiencies. The strategy to use standard designs and challenge requirements, a £9m efficiency for year 1 and 2, was underpinned by good rationale and evidence of the benefits being delivered. For year 2 efficiencies, the route has developed a comprehensive document describing each of the business changes, the rationale for these changes, evidence and assumptions underpinning them, risks and action owners.
- **Intelligent Infrastructure (Category D).** This initiative comprises seven route specific business changes, with limited description on what is proposed and how it will generate an efficiency, including to implement more Plain Line Pattern Recognition (PLPR), improve data quality, and capture management information, in pursuit of a £3.0m saving in year 2. We recognise however that this information is produced by the National Programme Team² as opposed to the route and that the route has demonstrated a clear commitment and dedicated resources to further develop its business change plans.

For other initiatives within our sample that do not rely on business change (Cat A or C), we looked at the quality of the project level Efficiencies Delivery Plans ('what activity' and 'how it will generate efficiency').

² National Programme Initiatives, including II and SCO are defined by the National Programme Teams not the route.



We found variations in the quality and level of detail of the project efficiency plans and how they will generate efficiency. For example we saw an appropriate level of detail for the following initiative:

- **Improved contracting strategies/rates (including packaging of works), delivered by IP Signalling (Category A).** A large proportion of this efficiency initiative for year 1 and 2 is being delivered by the Durham Coast Re-signalling project. The project has gained efficiency savings through working closely with the supply chain and tendering works, generating an efficiency of £16m for year 1 and 2, using the IP Signalling toolkit and national signalling model to determine the value generated.

Whilst we saw less detail on 'what' activity is proposed and 'how' it will generate efficiency in other areas. For example:

- **Durham Coast Re-signalling and Middlesbrough Whitehouse Re-signalling.** Other initiatives within the Durham Coast Re-signalling and Middlesbrough Whitehouse Re-signalling project, which span multiple efficiency initiatives, include a comprehensive list of initiatives although with high level information only on what activity will be undertaken and how to realise the efficiencies targeted. For example, 'Remove ARS and include DRS' (£200k), 'Use of Cisco 920 rather than over spec 903' (£160k). Whilst these are lower value initiatives in comparison to the main project efficiency, described above, we would expect to see more underpinning detail to provide additional assurance.

Track capex efficiency initiatives are calculated using well-developed national programme models produced by IP Track (Category A). We note that this £14m year 1 and 2 efficiency initiative is based on reducing the volume loss for all IP Track plain line renewals, ballast cleaning and Track Renewal System (TRS) by 9% through securing optimised access in comparison to in CP5. The efficiency is generated through improved unit rates which were calculated using the Infrastructure Cost Model (ICM).

Evidence indicates that the route has the tools and processes to develop further detail to describe its plans, business change and implementation plans. The route are continuing to develop and document the underpinning detail for efficiencies by building on the tools which are currently in place, notably, the Buildings CP6 Efficiencies table and the IP Signalling Efficiency Plan on a Page (EPOP) template. The route acknowledge that the application of these can be broadened to other initiatives and the contents enhanced to more fully document the changes, implementation plans and calculations to a broadly consistent base level of information.



b. Calculation of the forecast efficiency

We assessed the calculation of forecast efficiencies for the projects and initiatives in our sample, considering evidence of the definition and justification of calculation inputs, assumptions and methods and, where appropriate, the consistency of these with the approach agreed by Network Rail's Cost Benefit Working Group (CBWG). Consideration of the uncertainty and risk inherent within these forecasts is covered in the subsequent report section on 'approach to risk identification and management'.

Several key efficiencies are calculated based on robust, nationally developed calculation models and negotiated or contracted framework rates. For example, we saw evidence within the track workbank that centrally negotiated and contracted rates applicable to all Network Rail routes are used to calculate the quantity and profile of efficiencies per year, accounting for the route's planned profile and volume of work. The CP6 unit rate assumes that there is no volume loss on High Output, this is then compared against the 16/17 unit rate where the route experienced higher costs due to a 9% volume loss. This efficiency is embedded within the post-efficient cost and rates.

The aggregate improved contracting strategies initiatives within LNE&EM, which is founded on improved contract rates, is calculated at over £30m in years 1 and 2 of CP6 which have been banked and are being actualised.

Early contractor involvement, early scope definition, and use of minimum specification solutions includes good examples of detailed calculations. We saw evidence of detailed calculations which had underpinning assumptions and cited data and learning from CP5 and early CP6. An example includes the forecast for standardisation of delivery units, which is based on learning from delivery of the Doncaster Maintenance Delivery Unit (MDU) where a reduction in footprint of 25% was achieved. The route has determined that by optimising the footprint at Leicester, Barnetby, Hitchin and Finsbury Park DUs using the same approach this will have a saving which is based on a reduced cost per m².

Some examples of signalling efficiencies provided by the route did not have sufficient detail defining and justifying the basis of the calculation that underpins the forecast. Discussions with the route highlighted that, in many cases, the estimate inputs and calculation assumptions were informed by experience, historic data, cost rates (for example for plant, material, or labour) and engineering judgement by RAM teams. Within signalling, the EPOPs for Durham and Middlesbrough contained some calculations, others are yet to be detailed. For example 'Sharing Durham Coast depot, saving start-up costs and finding facility. Cost based on other scheme start ups' £150k, 'Remove ARS and include DRS' £200k.

Efficiency calculations relating to National Programme Initiative forecasts have been adjusted downwards by the LNE&EM route. The route undertook an internal review to validate the credibility of II and SCO national estimates. A prudent approach has been taken to reflect route-specific factors and the route's confidence level in calculations:



- **Intelligent Infrastructure.** The route originally had a National Programme Team derived forecast efficiency of approximately £35m for CP6. Following a validation exercise and the early stage of development of delivery plans from the National Programme Team, the route reduced the forecast to £22m and re-profiled the benefits realisation to the later years of CP6, thereby reducing the year 1 and 2 efficiencies.
- **Supply Chain Operation (SCO).** For SCO road fleet, continuous improvement and headcount reductions, the route has adjusted the efficiency calculation in years 1 and 2 and is engaging Route Services to agree a revised forecast based on more robust volume calculation.

c. Arrangements for monitoring progress in implementing business changes

We assessed the arrangements for monitoring progress in implementing efficiency plans and business changes, to confirm if there is a clearly documented evidence of appropriate governance and senior oversight.

There was good evidence that the LNE&EM route operates robust governance arrangements. This includes regular meetings to provide assurance and senior project oversight of projects and efficiency initiatives, from the delivery level to the executive level via progress reviews with deliverers, local MBRs, SRAM and DRAM MBRs, BCWG, Route Calculation Working Group. There is also effective monitoring of renewals through the route's control room visualisation rooms, although they contain relatively little information on efficiencies, for example to monitor implementation, business change, key milestones and issues or risks arising.

We did not find sufficient documented evidence of monitoring of efficiencies at a granular level. There is varied and often little detail on implementation plans and milestones, notably for capex efficiencies, which makes it hard to monitor progress on these. For example:

- **Stable workbank, delivered by IP Track.** The route listed the general actions required to achieve the efficiencies, including "RAM team issue workbank minimum of 2 years before delivery year (CP6 plan issued)" and "High Output Planning team submit access request in accordance with Engineering Access Planning timescales including regular meetings with TOCs/FOCs". There was no further evidence to show how this is being implemented in practice to allow it to be monitored at a granular level.

We found that monitoring of capex efficiencies focuses on projects achieving their allocated post-efficient savings derived from a 'top down' process. Renewals projects are being managed and effectively monitored throughout development and delivery to their post-efficient budgets (for example in the two major track and signalling workbanks). This provides some assurance of delivery of the efficiency target, although not explicit and documented monitoring of them.



For opex initiatives, the route cited a lack of visibility of detailed delivery plans for the II workstream progress, with the exception of track, as an area for development. We note however that progress is being made and that an investment paper is currently with the route Finance and Works Delivery teams to agree a DU implementation plan for the workstream initiatives and that the route are in the process of recruiting a Senior Project Manager and Project Manager to manage this plan³. Despite the lack of detailed plans, the route is confident in achieving the year 2 benefits through implementation of further 573 miles of plain line pattern recognition (PLPR) resulting in reduction in basic visual inspection (BVI) hours spent manually inspection.

In terms of delivering the full CP6 benefits the route states that it is 70% confident in achieving them, providing that the capabilities released by the national programme are on time and deliver the efficiencies aligned to them. As noted in the previous section on business change, the II programme is dependent on plans yet to be fully developed so this does present a risk to delivery of route efficiencies. The route are fully aware of this and has down rated its forecasts for years 1 and 2.

The Reporter recognises that all initiatives are not the same and a proportional approach to planning and management is appropriate for Category A and C initiatives. For example, a comprehensive SMART action plan is not appropriate or proportionate where efficiency initiatives which have been actualised or banked by the route, such as the capex Category A initiative 'Improved contracting strategies/rates (including packaging of works)'. For the opex Category C initiative 'Improved contracting strategies/rates (including packaging of works)' we note that there is a periodic review of committed orders under the Framework. This is considered a proportionate level of implementation planning given that the contract has been let and the route consider there is minimal risk that the forecast efficiency will not be achieved.

d. Approach to risk identification and management

We looked for evidence of the route's approach to the management of risks to its efficiencies plans, including its assessment of uncertainty in forecast savings.

There is limited documented evidence of the management of risks to efficiencies and their potential mitigation. For example, we did not see robust evidence of efficiency risk registers. We did, however, find some evidence that risks are being addressed by teams, although not formally, or documented and in all the cases in our sample. One notable exception was the II initiative, which has a robust risk register that included threats, mitigations, action owners and dates; and it has also risk adjusted its forecast efficiencies in year 1 and 2 to reflect lower confidence levels in achieving benefits.

³ This investment paper was not available to view in the timescales of the review.



We did not see evidence of explicit quantification of risks to efficiency forecasts. For example, range estimates or probabilised impacts on benefits. Some consideration of risk and uncertainty is implicit in forecasts as these are required to be estimated by initiative owners and teams based on a 'most likely' forecast of benefits.

The route has not established a separate risk funding provision for non-delivery of efficiencies; a stretch-target has instead been assigned to efficiency initiatives to address efficiency delivery risks.

Recognising that not all efficiency plans targeted at the outset of CP6 may be delivered as planned, the route's leadership has set each efficiency initiative owner a 20% stretch-target to outperform their targets. Project teams have or are establishing ideas hoppers for opportunities and emerging efficiencies to support this aim.

We noted the following factors that impact on the risk of efficiencies delivery:

- Capex efficiencies were allocated from a 'top down' process and are an embedded part of renewals projects and programmes driving to post-efficient targets, so some risk mitigation is implicit within renewals delivery plans. The route's strong management focus on project cost and delivery performance will indirectly help to contribute to mitigating efficiency cost savings risks from Category A risks. However, this will be less effective on identifying and management of risks for initiatives that require initiative enabling activities or change management (Category B).
- Track capex efficiencies, as with all Network Rail routes, are underpinned by contractually agreed central SCO cost rates and volumes. This gives very good confidence in the route's efficiency calculation, but also infers a risk that results from a dependency on achieving nationally contracted volumes, so efficiencies could be at risk if other routes do not deliver their plans, even if LNE&EM deliver theirs in full.
- There were no concerns raised regarding the new regional structure being established and we note that the route has plans in place to manage the transition.



e. Identification and documentation of any limitations with the approach for forecasting efficiency, how lessons learnt have been incorporated into efficiency plans and whether ORR and Network Rail are considering the right factors in providing assurance that Network Rail is on track to deliver its efficiency plans

Forecast limitations

We have found that the forecasting of many efficiencies, notably in capex, is largely financially focused and is derived from a 'top down' allocation to deliverers and then projects of post-efficient cost targets. Efficiency forecasts are then developed at project level in response to the targets. If the project level forecast is underpinned by a project efficiencies plan then it will be a more robust forecast than the original 'top down' allocation. Asset group and route level forecasts contain a mix of both types of forecast.

Lessons learnt

We saw limited evidence that the route has a defined and documented approach to incorporating lessons learnt within its efficiency plans. We noted the following where lessons learnt have been included:

- The route incorporated lessons learnt from CP5 in order to develop its CP6 targets, including the use of national calculators, the ICM model and the Activity Based Planning (ABP) models.
- The route regularly attends the BCWG to share lessons learnt.
- A periodic route calculation workshop has been established to draw on lessons learnt from CP5 and share learning for CP6.
- The route has Asset Working Groups where cross route learning has been shared.

Factors for providing assurance that Network Rail is on track to deliver its efficiency plans

We consider that an increased focus on monitoring of business change, initiative enabling activities, forecasting, monitoring and risk are appropriate for planning and delivery of what is a very significant efficiency programme. We have also suggested taking a proportional approach on Category B and D initiatives which are the most challenging and higher risk of achieving their forecasts.



3.5 Conclusions and recommendations

This section draws together our conclusions from our review of LNE route efficiencies and provides recommendations for ORR and Network Rail to consider. We have structured the conclusions under the headings in the Reporter's mandate:

- Quality of efficiency plans
- Reasonableness of savings forecasts, based on efficiency plans
- Consistency of total efficiencies with final determination

Conclusions – Quality of efficiency plans

We defined our expectations of planning within the context of an overall Efficiencies Management System which is described in our assessment methodology at the start of this section. Our conclusions from our review of a sample of initiatives are:

Capex efficiency plans need further development

We saw evidence that the route's efficiency initiatives were well-founded during the CP6 business planning process, drawing on CP5 data and learning, high-level plans and estimates developed by RAMS and wider teams, together with validation and assurance at DRAM and RFD level. We also saw good evidence that LNE&EM route is establishing a focus and culture of efficiencies in CP6. It has appointed dedicated initiative owners, who are supported and overseen by assurance from delivery through to executive level.

Capex efficiency targets were set 'top down' by the route management and allocated to deliverers and then onto projects. We saw evidence across our sample that capex efficiency initiatives and targets have been translated into project level efficient delivery plans, although the quality of these plans varied; expressed in terms of the level of detail and documentation on changes, implementation plans and calculations.

The route acknowledged that it needs to develop more detailed project efficiency plans and is continuing to do so. As summarised in the renewals section of this route report, the route are also looking at opportunities to enhance the content and focus on efficiency delivery plans within the route's high-quality York Headquarters 'control rooms' and asset reviews.

We note that the route are continuing to develop and document the underpinning detail for efficiencies by building on existing tools, notably the Buildings CP6 Efficiencies table and the IP Signalling EPOP template, which provide a good basis for capturing a consistent level of information.

We found more developed opex efficiency plans, although the route has acknowledged the challenge to delivery and dependencies at work that affect these plans in years 1 and 2.



The route operate robust governance and assurance arrangements

The route has a number of well-established meetings, which provide assurance and senior management oversight of projects and efficiency initiatives. In addition, the route uses visualisation rooms to provide a tool for reviewing efficiencies, although they mainly contain just financial information. Overall there appears to be more focus on costs and delivery as opposed to efficiency initiative implementation plans.

Efficiency reporting line of sight not clear

Each quarterly rolling forecast efficiencies data is aggregated from across all asset groups and projects into the route Efficiency Tracker. However, there is not a clear line of sight from the Efficiency Tracker to:

- Project level efficiency plan
- Enabling initiatives which can be in development and are assumed in project level plans

Conclusions – Reasonableness of savings forecasts, based on efficiency plans

Capex efficiency forecasts vary in quality

We found varying degrees of quality in relation to the documentation of forecast calculations including the sources of inputs, assumptions and treatment of risk, making validation of the reasonableness of forecasts difficult. For renewals, our findings showed an emphasis of managing to post-efficient budgets with planning, delivering and monitoring activity undertaken as part of the workbank project governance process rather than explicitly managing the implementation of business change. Whilst this approach provides some assurance, it does not give sufficient visibility of the factors which have led to an AFC being met or not, i.e. if it was due to efficiencies, inefficiencies, headwinds or tailwinds. Additionally, this approach does not take advantage of the lessons learnt which could be applied or avoided in future projects.

As stated previously, the route are continuing to develop more detailed efficiency plans including their documentation of forecasting which will allow for greater visibility and assurance that the benefits can be realised.

Conclusions – Consistency of total efficiencies with final determination

The route has set out plans that are consistent with its agreed share of Network Rail's target for CP6.

As summarised in Table 11, LNE&EM's baseline commitment for CP6, as defined at RF11 of 2018/19 was for £364m of capex efficiencies and £98m of opex efficiencies, totalling £462m. At RF4 the route maintained its capex forecast of £364m. It has forecast a 13% increase in its opex efficiencies of £110m, as a result of an increased forecast for local efficiencies, driven by initiatives such as: rationalisation of accommodation - Doncaster Griesly House savings; NOS / ROC benefits (Rail Operating Centres); safe and effective working; improved contracting and stock efficiencies. At the time of our review the forecast total for CP6 was £475m, a positive difference of £13m or 3%.

Efficiency, £m	FY20	FY21	FY22	FY23	FY24	CP6
RF11	52.6	68.8	109.4	111.0	120.1	461.9
Capex	47.3	53.9	88.3	84.7	90.1	364.3
Opex	5.3	15.0	21.1	26.2	30.1	97.6
RF4	58.0	70.9	110.9	113.0	121.8	474.6
Capex	47.3	53.9	88.3	84.8	90.0	364.2
Opex	10.7	17.0	22.6	28.3	31.8	110.4
% Change	10%	3%	1%	2%	1%	3%
Capex	0%	0%	0%	0%	0%	0%
Opex	103%	14%	7%	8%	6%	13%
P4 Yearly Profile	12%	15%	23%	24%	26%	100%
Capex	13%	15%	24%	23%	25%	100%
Opex	10%	15%	20%	26%	29%	100%

Table 11: Comparison of RF11 and RF4 route efficiencies*
*This data is inclusive of Efficiencies and Activity/Scope Efficiencies



Recommendations

Recommendation E1 – Enhance and develop efficiency plans, including forecast calculations

We recommend that the route develop and enhance their existing efficiencies plans to include further detail articulating, in SMART⁴ terms, each:

Business change – Defined plans for a programme of activity to deliver efficiencies and details of things the route has done or is preparing to do differently to generate efficiencies.

Forecast – Key inputs, sources, calculation method, assumptions, and any risk adjustment and basis for profiling realisation of benefits.

Implementation plan – Key activity, actions required, owners, resources, schedule and key milestones.

Risk – Identification of key risks to achieving the forecast efficiency and mitigations.

When the route implements this recommendation it:

- Should ensure that the level of planning and documented detail should be proportionate to the scale and complexity of the efficiency i.e. more for the Category B and D initiatives and less for Category A and C.
- Should provide guidance using templates, and completed examples to help illustrate the appropriate level of documentation required.
- Should maintain a clear log of the version and change control, status and maturity of each plan and to define and quantify its alignment with the route's Efficiency Tracker.

Recommendation E2 – Enhance and utilise existing templates to improve consistency of efficiencies documentation across the route

Building on recommendation E1, the route should enhance their existing EPOP and buildings CP6 Efficiencies table and utilise these across the route to capture a sufficient level of detail for their efficiency plans.

⁴ SMART: Specific, Measurable, Attainable, Relevant and Time-bound.



Recommendation E3 – Strengthen the focus on efficiency enabling implementation plans at the initiative level

The route should strengthen their assurance and monitoring focus on implementation plans for enabling activities and change management products required to deliver efficiencies at the project level. This will provide more visibility on the progress of key efficiency enablers and allow for early intervention and action.

Recommendation E4 – Provide greater line of sight from project level efficiency plans and forecasts to the Efficiency Tracker

We recommend that for each efficiency initiative as identified in the route Efficiency Tracker, the sub-initiatives are logged with their corresponding values, profiles and project, portfolio or programme ID in a master schedule, providing traceability on how they contribute to the route Efficiency Tracker and granular visibility of efficiencies.

Summary

We have provided below a summary of the routes preparedness to deliver its efficiency plans against headings requested at the mandate Steering Group.

Programme

LNE&EM has established a clear structure for its efficiency programme, with evidence of ownership and control of this, supported with dedicated resources to oversee its plans. The route's efficiency initiatives for year 1 in our review sample are well-founded and draw upon CP5 data and learning, high-level plans and estimates developed by deliverers. The route have made significant progress in identifying bottom-up efficiencies in CP6, however not all efficiencies are supported by a proportionate granular detail on implementation, which we the route have reported they are developing.

Forecasts

Capex forecasts are derived from top-down targets allocated by the route to asset groups and Delivery Agents (IP, Works Delivery). Bottom-up efficiency plans and forecasts are then developed on a project by project basis to replace the allocated targets. The detail underpinning the project level efficiency forecasts varied and not all efficiencies were supported by information including the sources of inputs, assumptions and treatment of risk. The route is continuing to develop and document detailed forecasts which will allow for greater visibility and assurance that the benefits can be realised. There is currently no line of sight at route portfolio level between project level efficiency forecasts and top down targets.



Several key efficiencies are calculated based on robust, nationally developed calculation models which have been reviewed and verified by the route. For Intelligent Infrastructure and SCO initiatives, the route has made prudent adjustments to the nationally calculated initiative forecasts, where there is uncertainty in the timing of benefits realisation.

Documentation

The route has comprehensive capex efficiency templates such as the Buildings CP6 Efficiencies table and the IP Signalling EPOP, albeit the detail included within these for the efficiencies initiatives in our sample varied in quality. The route acknowledge that the application of the templates can be broadened to other initiatives and the contents enhanced to more fully document the changes, implementation plans and calculations to a broadly consistent base level of information.

The route's opex efficiency documentation is more developed, in most cases supported by implementation plans, and developing tools and processes to assist in the management and monitoring of efficiencies.

