

Improving Cost, Safety, Performance and Sustainability

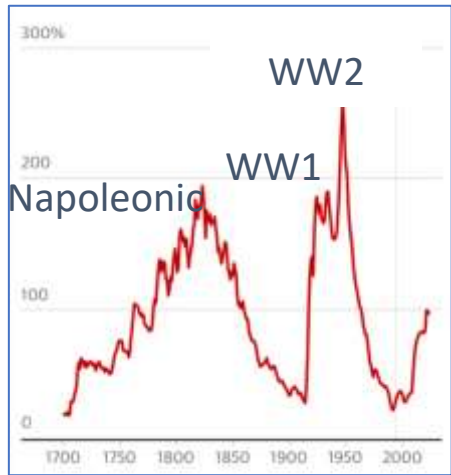
Simpler.
Better.
Greener.

Headwinds in Track (and some other assets)

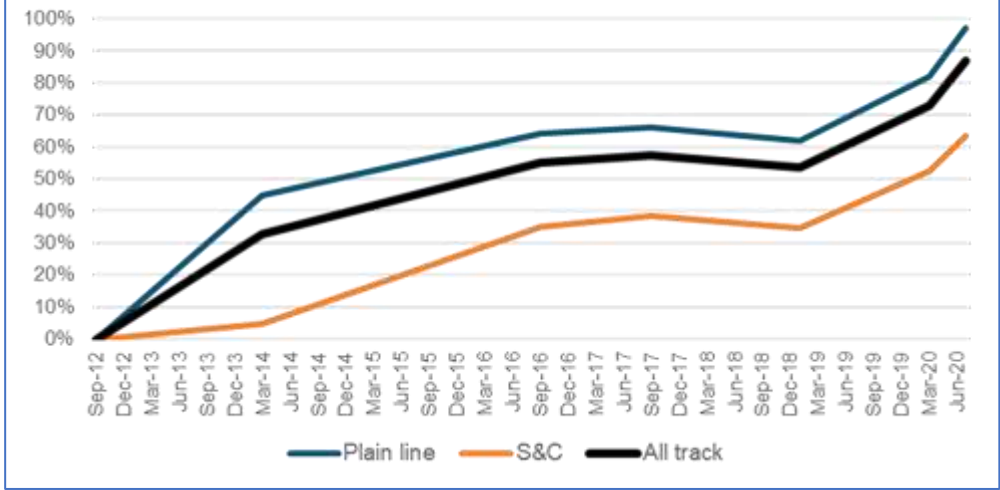
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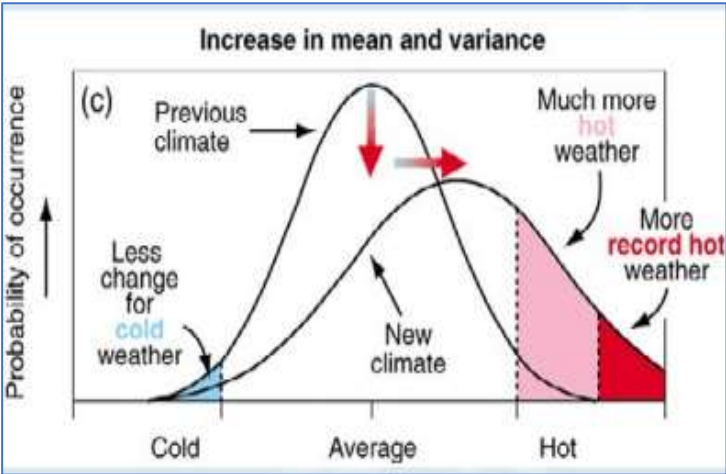
UK Debt as a % of GDP



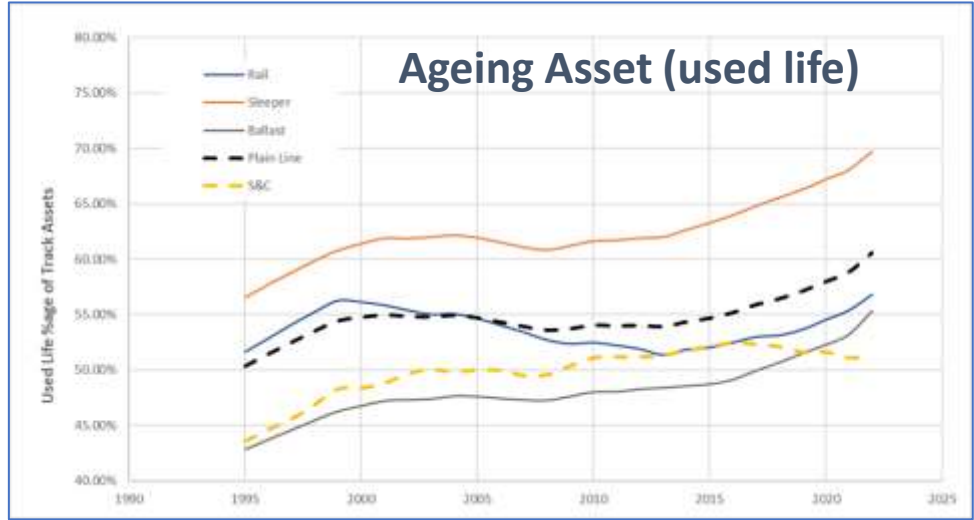
Inflation adjusted unit costs since CP5



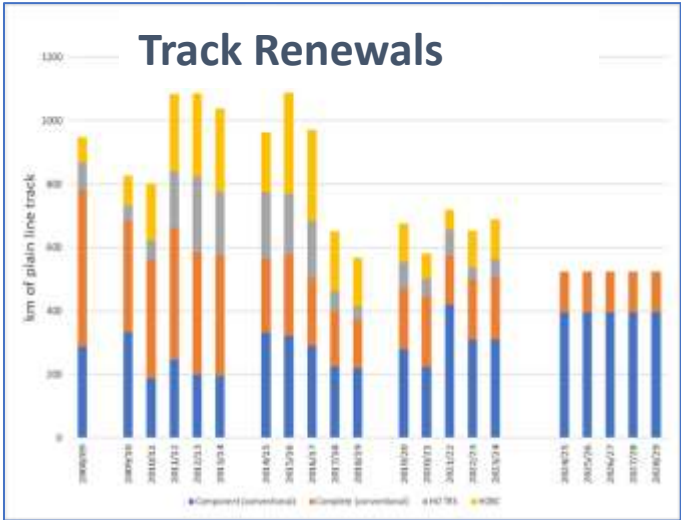
Climate change



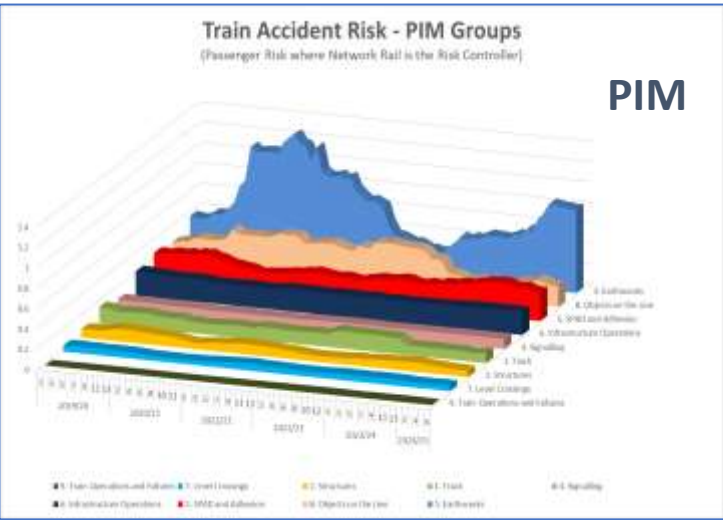
Ageing Asset (used life)



Track Renewals



Train Accident Risk - PIM Groups



National assurance outcomes

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Top Risks (from Engineering Assurance Report)

- Impact of lack of overall Organisational Capability
- Safety Task Force (STF) accelerated withdrawal of lookout protection
- Health & Safety Files (all assets)
- Asset resilience to weather and climate change
- Asset data and information
- Asset sustainability
- Level 1 and Level 2 Assurance
- Potential failure to meet Network Rail Infrastructure decarbonisation target for CP7
- Accountability
 - Delegated authority
 - Engineering accountabilities and responsibilities between routes and regions
- Reliability & Performance: CP7 Planning

Top Opportunities

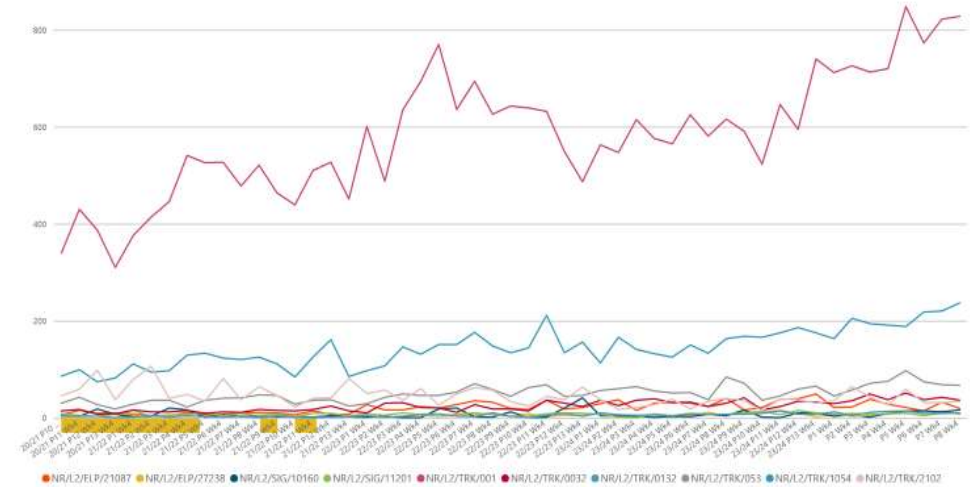
- Standards challenge and innovation
- RBM Implementation

New or updated items in black text



Monitoring Standard Variation Applications

All Top 10 Standards Applications



The majority of track construction and design variations are associated with the where clauses or parameters in the standard cannot be met due to specific site conditions.

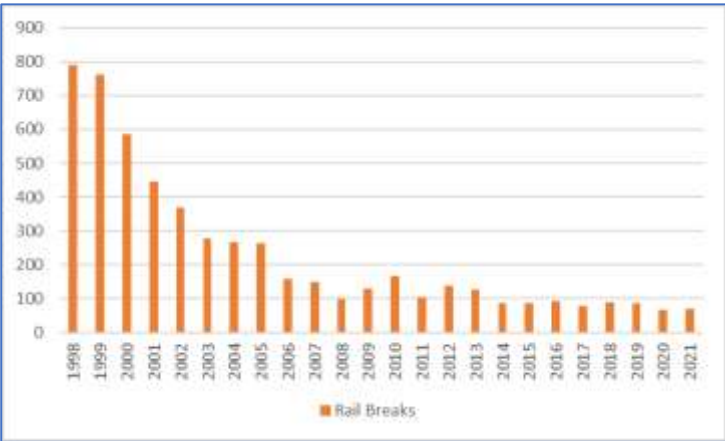
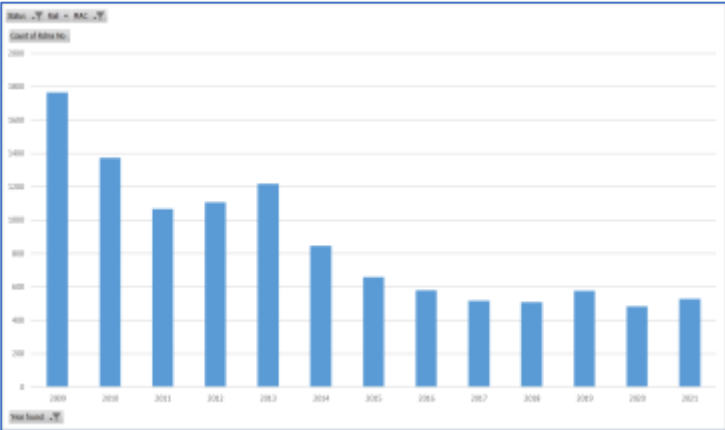
“if you don’t like a rule, don’t break it, change it!”- Standard challenge or SPEED

Tailwinds- Track has enjoyed an improving condition

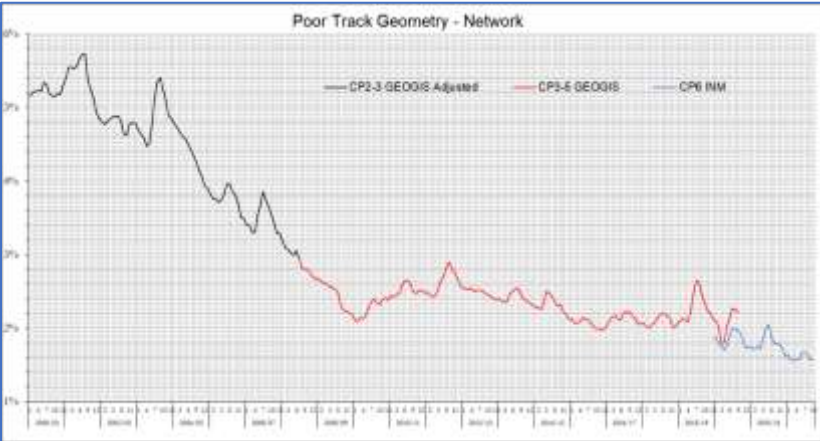
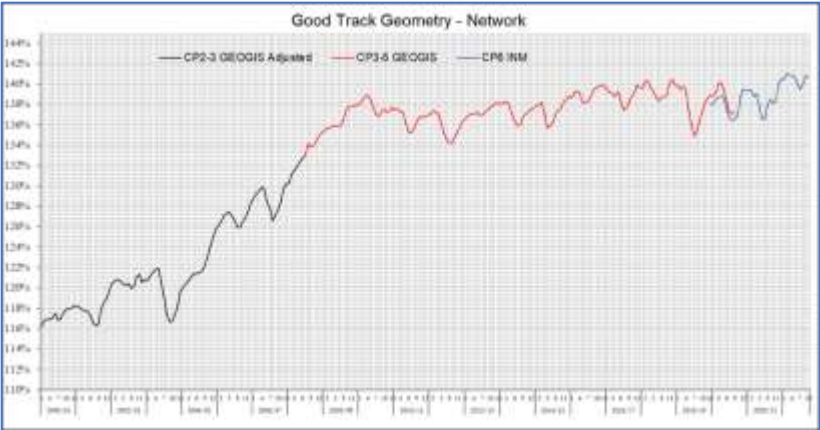
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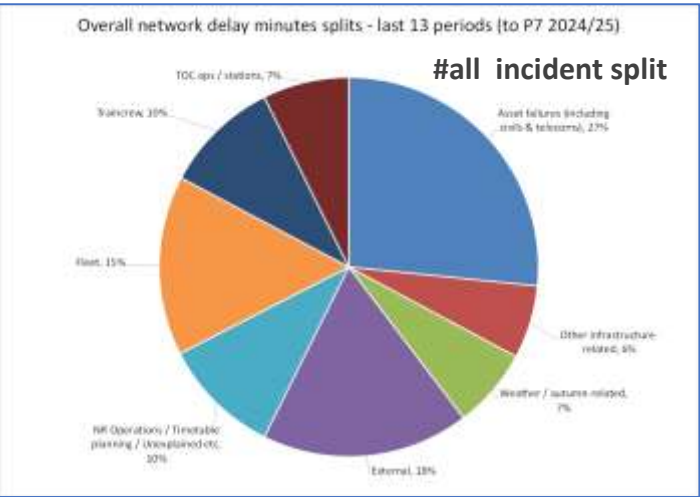
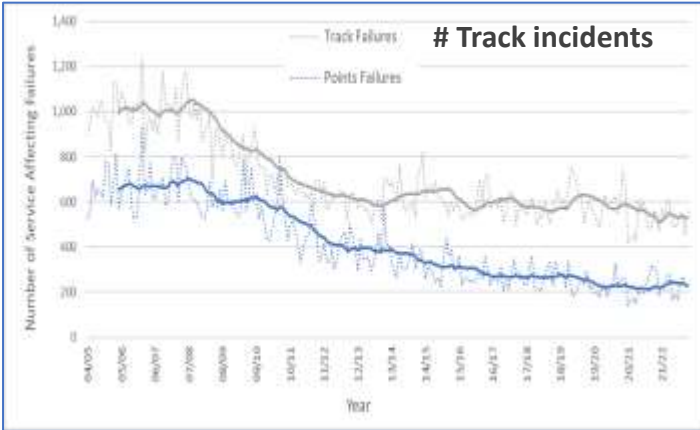
Breaks and Serious Rail Defects



National Geometry



Performance



.....which means.....

Greater safety and performance risk
Potential increase in speed restrictions
Weather resilience and decarbonisation more challenging
Cost pressures will only continue

So, we need

Better targeting of safety and performance critical interventions
Improved and efficient interventions
Component, rather than full renewal
Increased capability to, and cascade of serviceable materials
Improved understanding of MVP/WLC and consequences of decisions

Independent Findings from the AECOM Market Led and Minimum Viable product CP7 Review

Key Recommendations of interest to Track:

Cost Saving

Optimise access Strategies (**Potential £38M saving across all asset types**)

Deferral of some renewals possible (but not recommended)- (**Potential £270M saving**)

Re-use materials on Lower Criticality lines for cost and environmental reasons (**Potential £60M saving**)

Other Strategic opportunities

Invest in equipment, LWR trains and other plant with Possession Strategy to match (Long term)

Invest in measures to assist TMEs and Supervisors to inspect and maintain the track (Short to medium Term)



So....our approach in TA Track and S&C

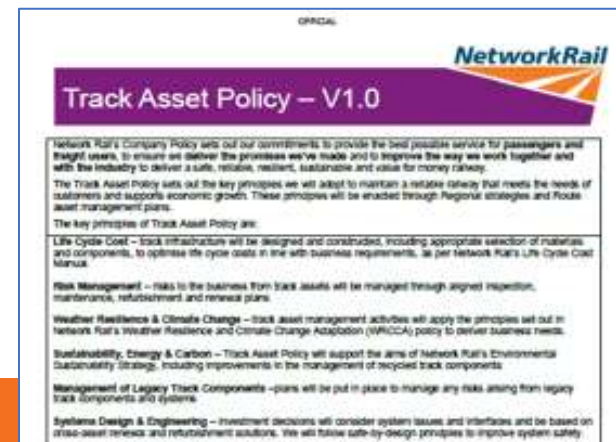
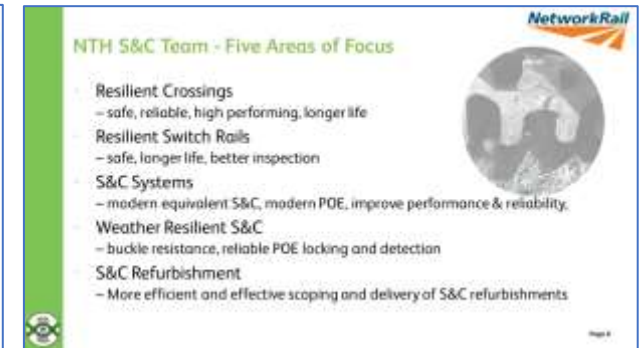
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Themes

Cost- Performance- Safety- Sustainability

Plan

1. NTH technical core priorities
2. Challenge Statements and Roadmaps
3. Collaboration across industry
4. Renewals cost challenge
5. R&D (prioritised with regions)
6. Competency developments
7. Developing + embedding 'Insight'
8. IM Fleet improvements
9. Assurance aligned to themes



Some impressive recent results

Rail Clamps

To investigate whether the fitment of clamps to rail defects is a suitable mitigation against rail breaks in today's railway.

Is there any evidence that clamps are providing support to broken rails

Is there any evidence that clamps impact the deterioration rates of defects

Can data be analysed to determine if a change to the requirements to fit clamps (TRK/001 Mod7) is feasible



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Passing trains over broken crossings

- The broken crossing at 87B Craigenlinny on 28th April 2024, had a significant impact on passengers
- Thus, we reviewed the track standards identified a gap in guidance for the conditions to enable running traffic over cracked crossings (TRK/001/Mod 8)



Example of a break at a Tin Metal weld



Example vertical break



Track Buckles



Rail expands due to hot weather. Buckles occur if there is not sufficient lateral resistance in the track system, the track can be forced to move sideways to release these compressive forces in the rails.

NEW TEF 3317 – Risk Assessment



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1b defects

- Challenge:** 1B defects require imposition of 20mph emergency speed restrictions between immediately and up to four hours from identification
- A different way of working:** Since 2019 Southern and NW&C Region have trialed variations to the standard that enables specific types of 1B MAC defects to be managed differently
- Review has shown that there is the opportunity to remove the need to apply a speed to approx 50% of 1b defects for up to 48 hrs**

CONSEQUENCE	IMPACT ESR WITHIN 24 HRS	IMPACT ESR FOR 48 HRS
	Unclamped midrail LIC 223 & 258	Midrail transverse & longitudinal defects - Transverse Midrail Rail Head Cracks (non rail head & wheel flange contact defects)
LIKELIHOOD	IMPACT ESR WITHIN 48 HRS - Clamped Mid Rail - Clamped Welds LIC 211, 227, 411, 423, 427	IMPACT ESR WITHIN 48 HRS - Rail End (transverse & acute defects) LIC 111, 127, 130

- 2x2 matrix – summarising the new requirements for LIC codes included in the change to standard
- Excludes defect types with unpredictable failure modes
- Requires the engineer to consider the overall asset condition and apply speed sooner if required
- If the defect is not removed by the extended timescale, the speed is still required

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Forward plans and results



Some other ideas in play

- Blended Ballast
- Steel Sleeper review
- Cost Maturity model development
- USP data analysis for LERP replacement
- W&W and CRSA TV for temporary clamps at 60MPH

SPEED top initiatives

	Lead	Standard	Idea	Status
1	Bethany Quayle	NR/L2/TRK/4239	Develop a Central Repository for track bed and ground investigations	Phase 1 Complete
2	Bethany Quayle	NR/L2/TRK/2102	Standard 2102 – bucket list of improvements	Underway
4	Eric Thomson	N/A	Guidance on an acceptable range of construction methodologies	Underway
5	Eric Thomson	N/A	New track quality measures	Underway
6	Bethany Quayle	TBC	Track Unit Rates Inflated by updating Interfacing Assets - use of Reasonable Opportunity Tool	Underway
7	Andrew Blakely	TBC	Assessment of opportunity to increase reuse of track assets	Underway
8	Bethany Quayle & Andrew Blakely	NR/L2/TRK/2500	Develop assurance for 'low risk, low complexity track jobs'	Underway
9	Andrew Blakely	NR/L2/TRK/2103	Passenger comfort assessment	Phase 1 Complete
10	Scott McKavett	NR/L2/INF/02202	Streamlining of Health and Safety Files	Complete
12	Robert Holbrow	N/A	Central Repository of approved context diagrams	Underway
13	Scott McKavett	NR/L2/TRK/2500	Ensure regional engineer endorsement of options selection	Underway
14	Scott McKavett	NR/L2/2009	Editable standard form to log Quads evidence	Underway
15	Scott McKavett	NR/L2/2009	Streamline competency framework to avoid duplication in quads	Underway

More ideas please!

Questions?

