

From Performance to Future Readiness: Managing the Railway as a System



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‘Supporting growth on an ageing Infrastructure’

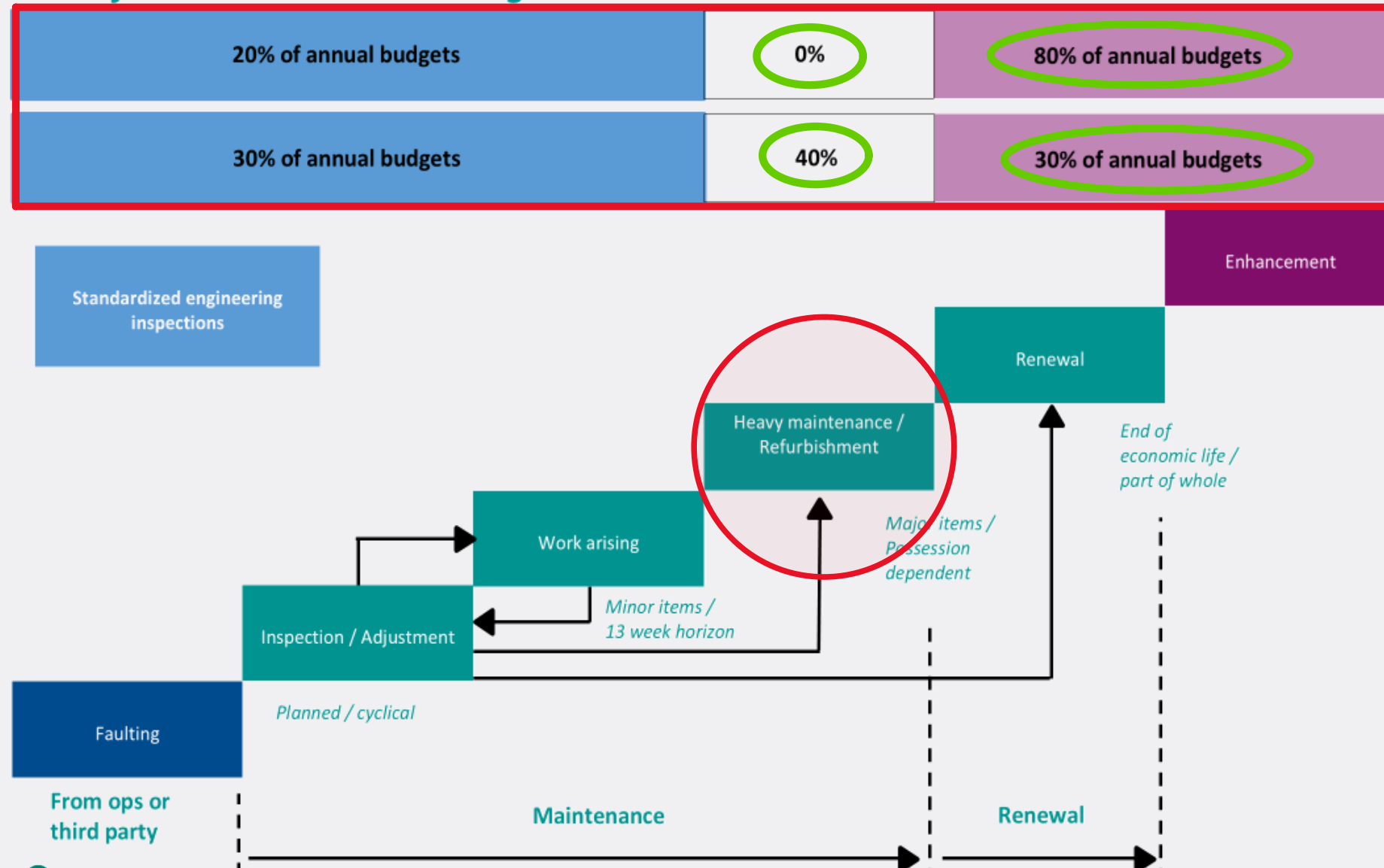
The last two decades have seen unprecedented growth in passenger numbers travelling on the NIR network, however, this is set against a backdrop of ageing track assets. The talk will address the challenges facing the Permanent Way over the next decade and its strategy to meet them.

Let's go Together.





Rail infrastructure asset management

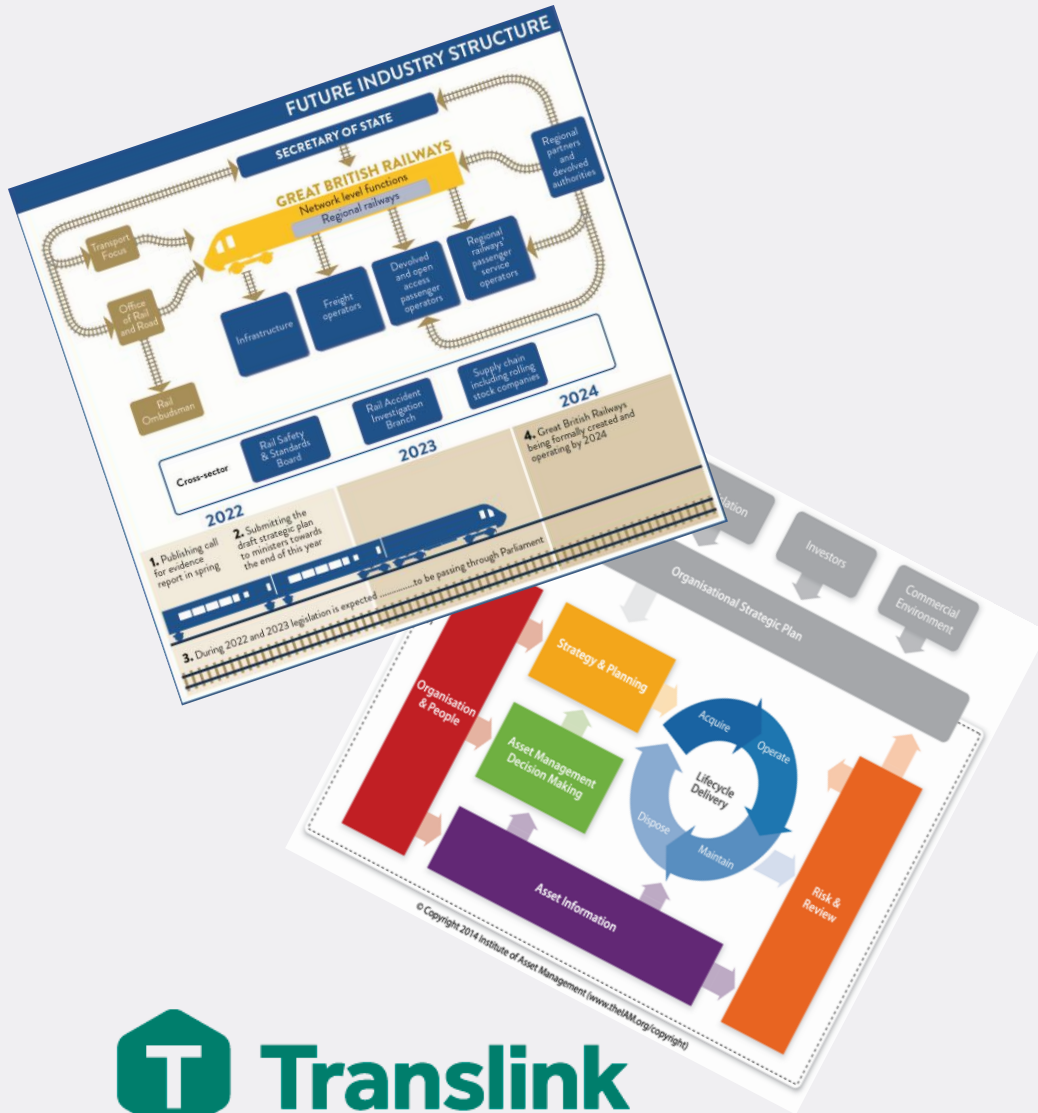


Outputs & Outcomes

Outputs	2020	2026
Rail Defects	2.32/mile	0.68/mile
Level Crossings	1 renewed every 3-4 years	4 refurbished per year
S&C	Frequent short notice repairs	40% refurbished (& BGC renewal)
Rail Breaks	1-2/yr	None in 4 yrs

Outcome
Delay Mins reduced by more than 50%
No TSRs imposed due to asset status
Trains cancelled due to Track more than halved

Future Readiness & System Thinking?



1. What have you got?
2. What condition is it in?
3. What do you expect of it?
4. What's the best way to get it there?

Translink – Rail Infrastructure: Asset Class Strategies

Structures & TPW

1. Bridges & tunnels
2. Special Structures
3. Culverts
4. Walls
5. CERDS / Sea defences
6. Earthworks
7. Drainage
8. Ancillary

Signalling & Telecommunications

9. Cables
10. Interlockings
11. Train Protection
12. Train Detection
13. Level Crossings
14. Points
15. Power Systems
16. Transmission Systems
17. CCTV Systems
18. Customer Info Systems
19. Communication Systems

Permanent Way

20. Rail
21. Sleepers
22. Ballast
23. Track Drainage
24. S&C
25. Sidings / depots
26. Level Crossings
27. Vegetation
28. Boundary protection
29. Plant (inc. Pway fleet)

Asset Condition – KPI Including HCR

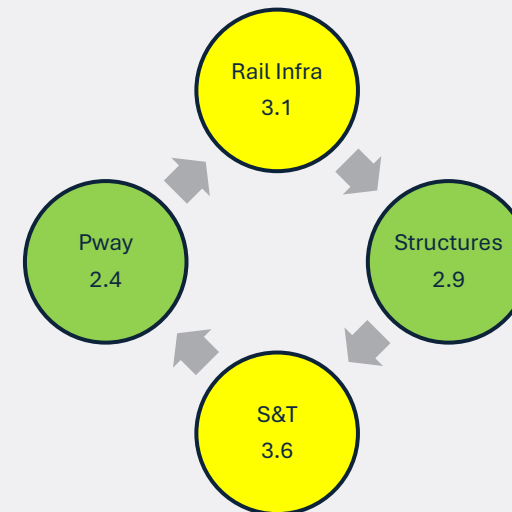
Rail Infrastructure Asset Condition - KPI- IAG

Permanent Way							
ACS & No	Asset Type	Measurement	Volume / Quantity	Condition recorded	Average condition rating	H.C.R	Condition Grade 4/5
 1	Rail	Mile	565.5	100%	1.7	C1	15%
 2	Sleepers	Individual	485K +	100%	2.1	C2	0%
 3	Ballast	Mile	282	100%	2.7	C2	24%
 4	Track Drainage	Data currently collected via EDR*					
 5	S&C	Individual	257	100%	2.5	C2	2%
 6	Sidings / depots	No current condition held					
 7	Level Crossings	Individual	133	87%	2.6	C2	7%
 8	Vegetation	Individual	250,488	100%	1.0	C1	0%
 9	Boundary protection	Mile	391	100%	2.8	C2	24%
 10	Plant (inc. Pway fleet)	No current condition held					

Structures							
ACS & No	Asset	Measurement	Volume / Quantity	Condition recorded	Average condition rating	H.C.R	Condition Grade 4/5
 11	Bridges & tunnels	Individual	435	100%	3.2	C3	24%
 12	Special Structures - Viaducts	Individual	15	100%	3.2	C3	24%
 13	Culverts	Individual	441	100%	3.3	C3	38%
 14	Walls	Individual	565	100%	3.2	C3	21%
 15	Earthworks	Individual	2855	100%	1.9	C1	23%
 16	Drainage	Individual	17992	73% / 98%	2.1*	C2	8%
 17	CERDS	Individual	69	100%	3.1	C3	7%
 18	Ancillary	Individual	400	100%	2.8	C2	5%

S&T							
ACS & No	Asset	Measurement	Volume / Quantity	Condition recorded	Average condition rating	H.C.R	Condition Grade 4/5
 19	Cables	Individual	2345	100%	3.5	C3	40%
 20	Interlockings	Individual	823	100%	3.5	C3	40%
 21	Train Protection	Individual	1249	100%	3.5	C3	40%
 22	Train Detection	Individual	1232	100%	3	C3	40%
 23	Level Crossings	Individual	95	100%	4	C4	40%
 24	Points	Individual	240	100%	3	C3	30%
 25	Power Systems	Individual	850	100%	4	C4	40%
 26	Transmission Systems	Individual	620	100%	3.5	C3	50%
 27	Communication Systems	Individual	777	60%	4	C4	40%

Condition Code	Condition Description	Condition Description
C1	Very Good	Asset fully meets all standard requirements, with no visible defects or deterioration. Performing as intended with no intervention required.
C2	Good	Asset meets standard requirements but shows minor deterioration (e.g., surface wear, vegetation). Deterioration does not impact performance or safety.
C3	Satisfactory	Asset meets core functional requirements and remains serviceable. Early signs of deterioration are present but do not pose a current risk to performance, safety, or reliability.
C4	Poor	Asset shows clear and noticeable deterioration. Likely to require short-notice or repeat maintenance. Elevated risk of failure in the medium term if not addressed.
C5	Very Poor	Asset exhibits extensive deterioration or significant defects. Requires frequent reactive or short-notice maintenance to remain safe. High risk of failure in the short term, and elevated likelihood of functional failure in the medium term.



Mean Average of
Departments and the
Division

Route Vision Statements?

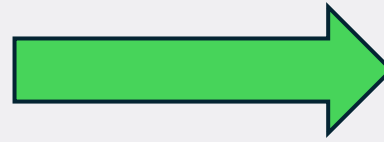
Describes what the railway needs to look like in the future, so that today's investment and maintenance decisions are better aligned to tomorrow's service requirements.

On the xxxxxx line, by 20xx have Infrastructure capable of a line speed profile as per xxxxxx that supports a service frequency of xxxxxx delivered by xxxxxx power.

Infrastructure assets to have a condition rating of xx, and xx% adapted to 2050 climate predictions

Capital Plan- Where it Emerged From

- 20 years ago The Capital Plan began modestly as lists of schemes
- Some schemes too large for in-house teams & maintenance contractors



Use of external contractors

- Schemes were developed from the needs of the maintainers.
- Often identified in a reactive manner.
- Less often via strategic direction.
- Varied in scale from replacing 80 IRJs at £300k to installing 5 culvert replacements at £750k to re-signalling the CE to DY~LY line at £46m.
- 3 project managers, 1 in each asset department, from about 2000 to 2014/2015

delivering around £15Mp.a.



Department of 45
People in 2026

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Capital Plan – Current Size & Scale 2026/27

- 98 live projects in Network Engineering
- 10 live projects in Network Development
- 110 live projects plus 20 in defects period
- 100+ in Pre-Mandate “Good Idea” Stage
- 2026/2027 Renewals managing £100m of work
- Ambitions for 2027/2028 & 2028/2029 is circa £115/120m p.a. in N.Eng

LARGE VOLUMES

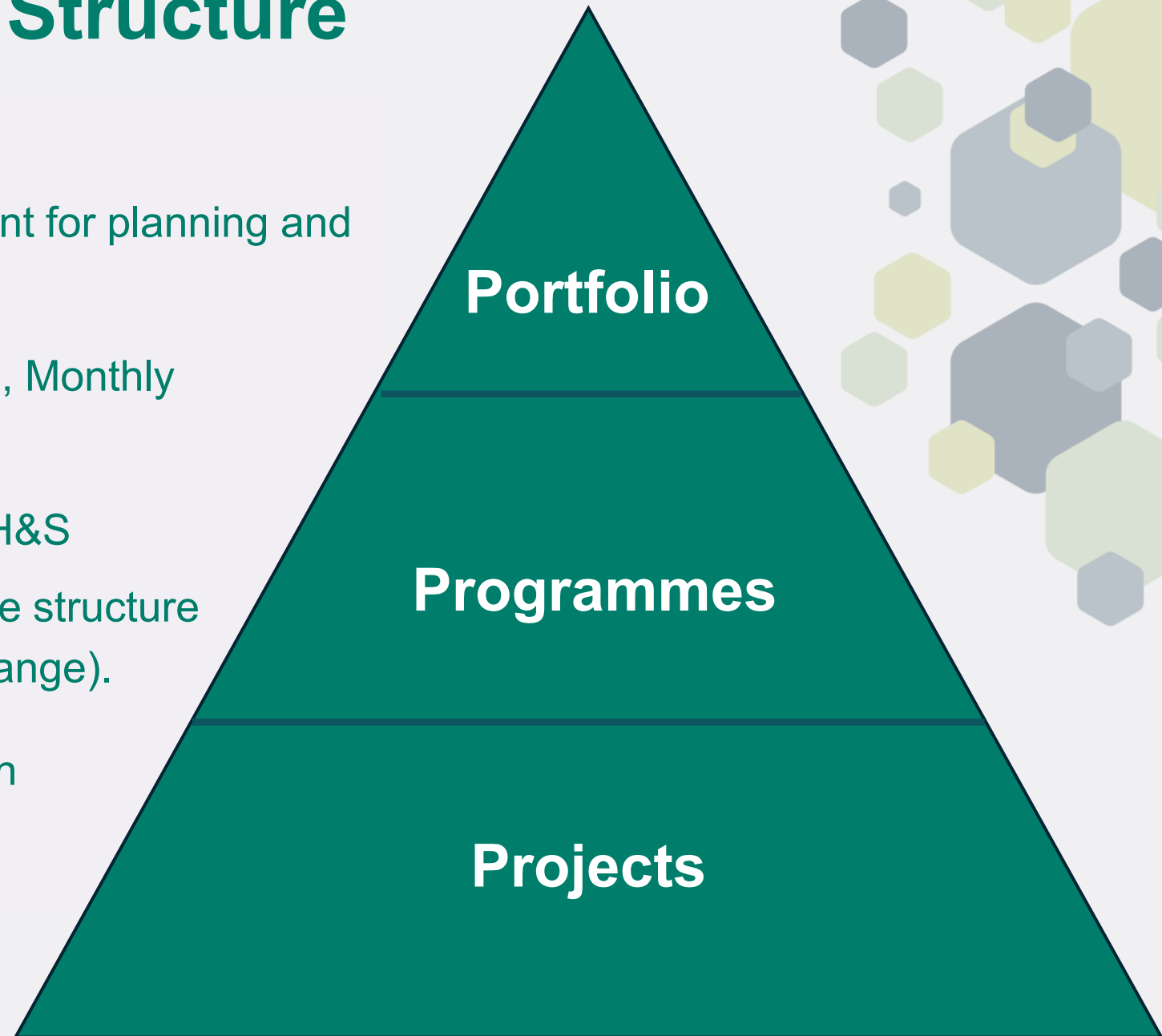
LARGE COSTS

SIGNIFICANT RISKS

REPUTATION

Capital Plan / Portfolio Structure

- Translink operates with a P3O structure.
- We integrate the three levels of management for planning and delivery of the capital investment.
- Operate a consistent, centralized 12 Period, Monthly Reporting Cycle.
- In Period Progress /Spend/ Risks/ Issues/ H&S
- Recently Translink has updated programme structure
 - To align with need (asset / business change).
 - Assigned a Sub-Portfolio Owner
 - This supports project/ need prioritization
 - This supports value management
 - This supports benefits identification.



Capital Plan – Sub Portfolios

Translink's overall capital plan has 6 categories:

1. Network Engineering (1.1 to 1.9)

2. Property

3. Rail Fleet and Engineering

4. Bus Fleet and Engineering

5. ICT and Business Systems

6. Network Development

- Renewals Department manages £100m in 2026/2027 of capital works
 - Network Engineering has a spend in 2026/2027 of £91m.

Sub-Portfolio Owners balance each Period:

SPEND (V) BUDGET

MILESTONE ACHIEVEMENT

IN PERIOD PROGRESS v BASE LINE

Network Engineering - Categories

Network Engineering

1.1
Track

1.2
Structures

1.3
S&T

1.4
CE to DY~LD

1.5
BREP

1.6
Rail Safety &
Operations

1.7
Climate
Resilience

1.8
Backlog
Recovery

1.9
Track Plant

Capital Plan – How Network Engineering is Created & Grown

A partnership based piece of work each asset Head of Department & each Sub- Portfolio Owner.

Head of Department

Identifies possible projects in January to March periods each year.

- Asset condition data.
- Past failure patterns
- Industry Regulations.
- Engineering knowledge.
- New technologies.
- New risks



Sub-Portfolio Owner

Agrees across Department Division the Up-coming FYR's Budget in January to March.

- Match- up of available uncommitted budget against highest priorities.
- Is there a fit to up-coming rail closures?
- Potential benefits
- Do the proposals “fit” Network Engineering Plan or are these Network Development?



**NEW
PROJECTS
BUILT INTO
CAPITAL PLAN**

Capital Plan - New Influencers to Building It

Translink is very ambitious towards:-

- Increasing the frequency of services
- Improving the reliability of services

Further ambition and goals were set in:-

- Department for Infrastructure and Department of Transport co-authored The All Island Strategic Rail Review, July 2024.
- Translink's Rail Network Development Study, 2025

Stock has been taken within Rail Infrastructure Engineering and Renewals

- Route vision statements
- Translink's Collective decisions made at our Capital Plan Summit

- Short Term 0 -> 5 years by 2030
- Medium Term 5 -> 10 years by 2030 – 2035
- Longer Term 15 -> 25 years by 2040 – 2050

Capital Plan- Prioritization & Selection

Not all project ideas are “The Best”- Not all Projects are Equal

“Best” being defined by the **Value achieved**.

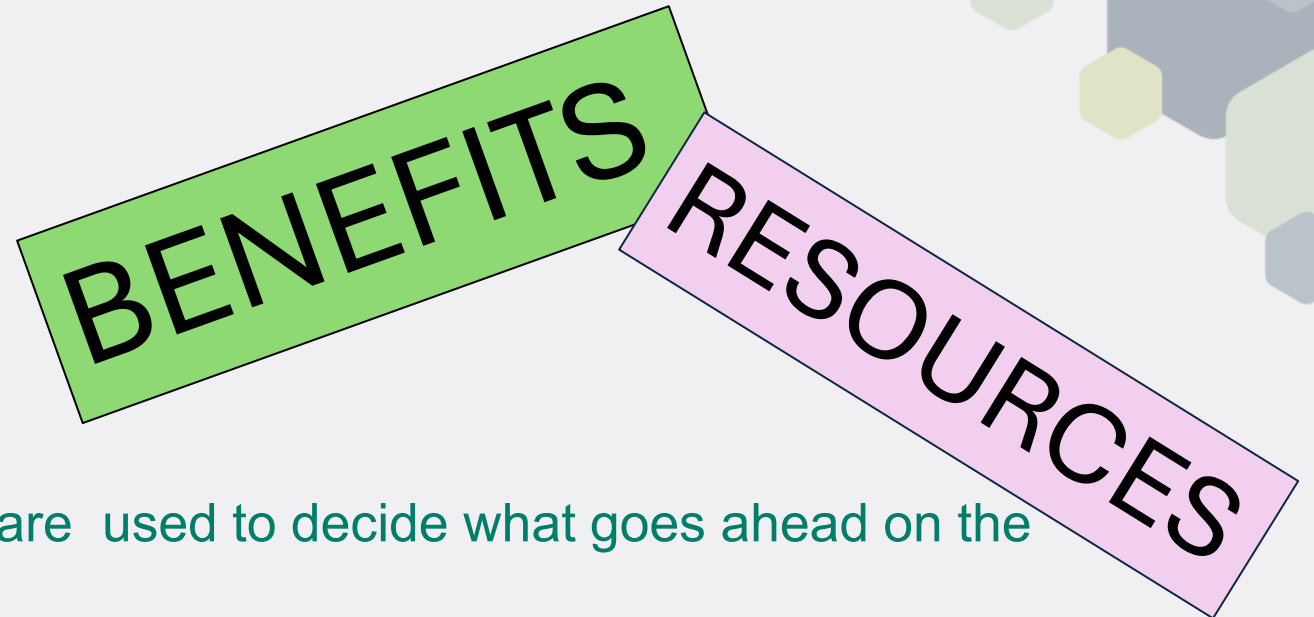
Value is a combination of:

- Operational Improvement
- Asset Condition Improvement
- Emerging Risks mitigated
- Climate Change mitigated
- Safety Improvements

Measured against the Resources needed.

Formal prioritization & selection of projects are used to decide what goes ahead on the capital plan and when it goes ahead.

A key factor being the projected annual budgets.



Project Prioritisation Model

Value Definition

$$Value \approx \frac{\text{Benefits (monetary and non – monetary)}}{\text{Use of resources (money, people, time, energy and materials)}}$$

Strategic Alignment - Primary Drivers (Outcomes)



Capital Plan – Delivery Approach

On The Ground

1. As much as possible in Rules of The Route Periods.
2. As much as is safely and logistically possible in any weekend closures or blockade.
 1. The core works - its access needs, plant needs, labour needs & its risks
 2. What would be possible for other capital projects or maintenance works?
 3. Being “Possible” looks at access, plant, labour, conflicts on space on the infrastructure, wheels-free testing, nuisance to neighbours, possibility of importing H&S risk & environmental controls

The programmes of the various projects are brought together on a single integrated time chainage programme, loaded with labour and plant.

Capital Plan – For 2026 until 2035

The Capital Plan is established, understood, controlled & ready for £1Billion of investment for the next 10 years.

- The Programmes & Projects are a reflection of:
 - known assets conditions – within Network Engineering
 - network need- within Network Engineering
 - future direction towards expansion – within Network Development

Rail Infrastructure Engineering and the Renewals are in lock-stop on the content in the Capital Plan.



Keeping the Plans on the Right Route

A KPI Framework for Visibility, Accountability, and Delivery.

Not yet another report, this is about driving decisions.

The framework offers a system-based approach that integrates multiple rail performance dimensions into a coherent model.



Purpose of the KPI Framework.

Structured Performance Management

The KPI framework provides a structured approach to manage and sustain rail infrastructure performance effectively

Linking Operational and Strategic Metrics

It bridges operational data and strategic decisions by connecting assets, people, finance and governance elements

Proactive Risk Management

The framework introduced leading indicators to identify emerging risks and shift focus from reactive to proactive management

Transparency and Accountability

Standardised KPI scoring enhances transparency, benchmarking, accountability and organisational alignment.



Wedge	KPI (Sub-element)	KPI Split (%)	Contribution to Total (%)
Performance	Delay Minutes	50%	14%
Performance	TSR / NCI	30%	8%
Safety	FWI	40%	6%
Safety	Major Incidents	40%	6%
Performance	Cancellations	20%	6%
Condition	Condition Index	40%	5%
Assurance	Compliance	40%	4%
Climate	Weather Impact	40%	4%
Finance	Funding Adequacy	40%	4%
People	Capability	40%	4%
Condition	Reliability	35%	4%
Climate	Resilience	35%	4%
People	Absence	35%	4%
Assurance	Close-out Effectiveness	30%	3%
Assurance	Inspection Delivery	30%	3%
Finance	Efficiency / Value	30%	3%
Finance	Financial Control	30%	3%
Safety	Good Catch / Near Miss	20%	3%
Condition	Reactive Burden	25%	3%
Climate	Adaptation	25%	3%
People	Turnover	25%	3%
Total			100%

Overall Value and Conclusion

Comprehensive Performance Management

The KPI framework captures outcomes and drivers enabling a system-based and proactive approach to rail infrastructure management.

Balanced and Transparent Metrics

Integration of safety, climate, finance and other dimensions ensure a holistic view in standardised scoring for accountability.

Strategic Decision Support

Align operational activities with strategic operations to improve decision-making, resource allocation and stakeholder communication.

Sustainability and Resilience

The framework supports sustainable short-term gains and system resilience against evolving challenges for continuous improvement.

Q&A

