Asset Management in Network Rail

Turning theory into practice

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Outline

• Adopting a systematic approach

• How we’ve applied it to improving our asset management decisions

• How we resourced and organised the work

• A view on whether the benefits justify the investment
Adopting a systematic approach
The need for a systematic approach

• Arguably the largest asset management company in the UK
The need for a systematic approach

- Arguably the largest asset management company in the UK
- Complex and ageing infrastructure: 30,000 km of track, 29,000 bridges, 2,500 stations
- 35,000 staff (maintenance in-house)
- Devolved organisational structure (10 operating routes)
- Major capacity enhancement programme
- Challenging cost reduction targets
Who and what is involved

- Involves the whole company and external stakeholders
- It is a long term commitment – circa 10 years
- Includes some big individual projects e.g. asset register
- Most benefits come from a larger number of smaller incremental improvements and the removal of barriers between business functions
- To get started we needed a common interpretation of asset management across the company
Network Rail’s interpretation of AM

Asset management on a page

- All Network Rail’s asset management processes
- Line of sight from strategy to implementation
- Plan–Do-Review framework
- Independent of organisational structure
- Used to assign responsibilities and accountabilities
Network Rail’s interpretation of AM

What sort of railway do we want and how much are we prepared to pay?
Network Rail’s interpretation of AM

What is the optimum way of maintaining, renewing and upgrading the infrastructure?
Network Rail’s interpretation of AM

How do we translate the national asset policies into local work plans?
Network Rail’s interpretation of AM

What is the optimum way of delivering the work?
Network Rail’s interpretation of AM

What resources do we need to deliver the work safely and efficiently?
Network Rail’s interpretation of AM

How can we be sure we’re doing the right things?
Network Rail’s interpretation of AM

Are the appropriate supporting mechanisms in place?

Enablers:
- Asset information
- Analysis tools
- Competencies
- Processes

Route utilisation, output & funding specification

Monitoring and review

Work execution

Route delivery plans

Route asset management plans

Asset Policies & Standards
Improving asset management decision making
Asset Policies

What is the optimum way of maintaining, renewing and upgrading the infrastructure?
Purpose of the asset policies

- Customers & funders
  - Journey time
  - Punctuality
  - Capability / Capacity
  - Value for money

- Delivering work
  - Operating Route plans
  - Suppliers
  - Scheduling work
  - Handback
Structure of the asset policies: designed to answer seven questions

1. What assets do we have?
   → 2. How are they performing, what are they costing us?
   → 3. How do we want them to perform in the future?
   → 4. What intervention options are available?
   → 5. Which regime represents the lowest whole life cost?
   → 6. What are the associated work volumes, expenditures and outputs?
   → 7. What are the delivery implications, uncertainties, risks?
Asset Policies: a major commitment

- Established a cross-functional team: strategy, engineering, operations, maintenance, renewals, finance
- Co-located the team for three years
- Approximately 100 person years’ effort
- Asset Policy documents produced for 11 asset groups
- Also developed models, processes and a large knowledge repository
- Underpinned £18bn component of business plan for 2014-19
Are the asset policies effective?
Three tests of asset policy

1. Robustness test
   • Will implementation of the policies deliver the required outputs in the short term (circa 5 years)?

2. Sustainability test
   • Will continued application of the policies maintain the outputs in the long term (circa 30 years)?

3. Efficiency test
   • Do the intervention regimes in the policies represent the lowest whole life cost?
Robustness test

Rail breaks

Number of breaks in reporting year

Reduction in broken rails
Sustainability test: current position

Installation dates: rail, sleepers, ballast

Percentage installed in period

Ballast  Sleeper  Rail

Sustainability test: looking ahead

Rail used life fraction %

- Criticality band 2
- Criticality Band 4
- All

Rail used life fraction (%)
Efficiency test

- Chart shows the whole life cost of five methods for managing a track section
- Options range from ‘only maintain’ to ‘full renewal’
- Costs include maintenance, renewal, safety and train performance
- The lowest NPV does not always represent the optimum choice

Option selected
Changing the regulator’s perception

“Network Rail has significantly reworked its policies, in line with best practice. They show a step-change in quality and coverage. The tools - to support its development of minimum whole life cost asset policy - are considered to be comparable to or at the frontier of best practice.”

Office of Rail Regulation

Draft determination of Network Rail's outputs and funding for 2014-19

June 2013
Contributing to wider business improvements
Last 10 Years: Passenger safety risk

Passenger Risk in Train Accidents

PIM Index per million train km

Passenger Harm in Other Accidents

FW/billion pass journeys
Train delay minutes

All train delay minutes

- Planned
- External + Weather
- Operations
- Infrastructure
- Train operators
- Unexplained

NR caused delay minutes each year

- Takeback / unexplained
- Timetable planning
- Operations
- Other external Factors
- Weather
- Adhesion
- Other infrastructure
- Other Non-Track
- Signalling + power supply
- Train detection
- Points
- Track Defects
- TSR’s COT/GCC

Million train delay minutes

- 2011/12
- 2010/11
- 2009/10
- 2008/09
- 2007/08
- 2006/07
- 2005/06
- 2004/05
- 2003/04
- 2002/03
- 2001/02
- 2000/01
- 1999/00
Still a long way to go….

Priorities

- Management of ageing bridges
- Risk based maintenance
- Improvements in asset information (implementation phase)

See Andrew Sharp presentation
Conclusions

- We have had a long association with asset management
- It has been technically and organisationally complex to implement
- It took a long time to gain acceptance across the company
- It is difficult to isolate the benefits directly attributable to AM but the contribution is significant and is recognised across the business
Thank you