Lineside Asset Management

What is the situation?

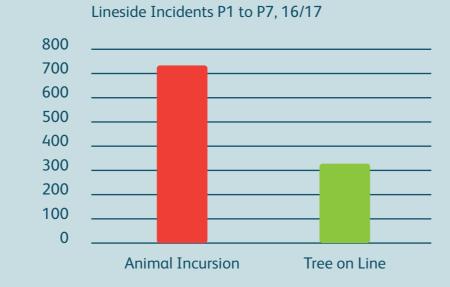The management of the lineside principally deals with:

- Management of vegetation along the railway and within the boundary to reduce or avoid risk to the railway
- Assuring a boundary is provided to satisfy a legal requirement and avoid trespass or incursion.

The Lineside asset uses Ellipse for its work bank management system and for our asset database. Weaknesses have been identified in this method and the overall suitability of Ellipse's asset-inventory depository, vegetation reporting system and boundary management hasn't been fully explored or tested. Current practices for capturing asset information are inefficient and rely on manual inspection. For example, there are no known processes for capturing information regarding life expectancy and degradation measures.

We do not currently have a process to record asset behaviour. For example, what is expected performance from the asset? (growth & decline).

We are unable to assess external influence with regard to changes in adjacent land management and influences from environmental conditions.

A lack of understanding of the asset has led to many incidents across the network. Some have resulted in damage to infrastructure or vehicles.

Lineside Incidents P1 to P7, 16/17

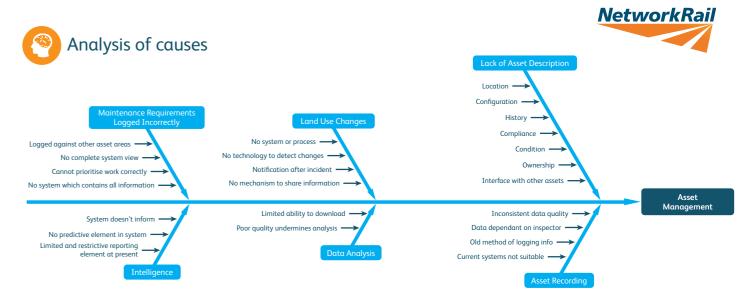|	
800	
700	
600	
500	
400	
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Animal Incursion	Tree on Line

Priority problems

Specific priority problems

- We seek systems to provide insight so that failure can be prevented. We are alerted when the asset fails or is about to fail.
- We are unable to demonstrate the configuration and condition of our asset.
- At best, we react to recover the railway without investigating the root cause.
- We lack the ability to gather a full inventory of the asset, the risk of failure and its associated lifecycle.

Related goals

- A mechanism for understanding root cause and the appropriate prevention measures.
- An efficient system for updating the asset.
- Provision of an asset register for lineside.

Benefits

- 'One version of the truth' in that all the asset and work carried out on it, is recorded in one place.
- Up to date asset record that can report condition and risk ranking.
- The system is efficient at accepting information from inspection, survey, remote monitoring and LIDAR data models.
- Improved performance as a result of better-timed intervention.

Analysis of causes

Scope

To satisfactorily provide for a linear asset but with considerable variation in its composition. Not all elements must be recorded but the system must be adaptable to capture key information along with varying extents. The network is segmented to reflect the output of inspection as well as produce reports on health or compliance within standardised units (mainly 1/8ths of a mile).

The need to log work for vegetation which affects other assets and the information is provided in varying formats and configuration.

Improved means of data entry, current practices rely on availability of resources to be able to update ellipse from paper forms returned to planners and system support managers.

Success relies on the system being efficient and adopted by the inspector/surveyor. The system relies on Managers having sufficient knowledge to manage the asset updates within a data storage system within CITRIX (Field data manager).

Relies on up to date information captured during the inspection, without any condition measures and history. It is difficult to endorse for decisions support.

Inspections are required after an incident or in anticipation of one. We need indicators so that preventative measures can be adopted.

Data gathered from LiDAR survey is not currently transferable into ellipse to update the asset register

To address these challenges it is expected that R&D actions will need to address the following aspects:

- What asset-management systems are used, externally from Network Rail, for the lineside or its equivalent?
- What capability is available (again external to Network Rail) to carry out this assessment? We are looking for a more flexible and advanced capability for digital input and management of an asset database.
- What examples are carried out on other companies of use of systems that enable proactive, successful management of our lineside elements?
- Have other Network Rail departments evaluated or used ELLIPSE for the full range of requirements?
- What technology is available to alert of a change in risk to a lineside asset?
- Can this technology capture necessary information and data on a remote basis?
- What experience is there of using 'data, information, knowledge, wisdom' principles to asset management methods in line with our lineside challenge?