1. LONDON UNDERGROUND PERFORMANCE TARGETS

1.1. Introduction

This note aims to provide an explanation of the methodology used by NERA to generate performance targets for London Underground. Specifically, NERA was asked to provide guidance on what targets should be adopted by LU for performance regarding delays of 15 minutes or longer within five years of the Tube being handed over to Transport for London.

The study conducted by NERA for The Tube Future Priorities Scrutiny Investigative Committee in June 2002[1] forms the foundation for this piece of work. In this report, four causes of delays in excess of 15 minutes were identified and statistics were provided on; signal failures, rolling stock problems, staffing difficulties and track failures. This current piece of work generates performance targets for each of these four areas using data from the original report. It then uses them to generate an overall target reduction in delays over 15 minutes.

1.2. Methodology

In essence the targets are generated on the basis of what NERA believes to be 'best practice' performance in each of the areas on each of the routes.

Specifically, the methodology adopted involved four steps:

- Calculation of number of observed delays;
- Generation of the 'best practice' train kilometres per delay;
- Calculation of number of delays on the basis of the 'best practice' performance; and
- Calculation of implied performance targets.

The first stage of calculating the observed delays for the 2000/01 and 2001/02 years involved using the data on annual train kilometres and train kilometres per delay.[2] The data is disaggregated by time, tube line and cause of delay.[3] Mathematically, if we have these two series, we can calculate the number of delays per year for each line, in each year and for each reason by simply dividing annual train kilometres by train kilometres per delay. This is what we did.

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1 *The Tube: Moving On Draft Report, A Report for The Tube Future Priorities Scrutiny Investigative Committee*, NERA, June 2002.

2 Data is sourced from tables 3.1, 6.4, 6.5, 6.6 and 6.7 in the original report.

3 Cause of delay applies only to the train km per delay data.

Stage two of the process, the generation of the 'best practice' level of train kilometres per delay, involves an element of professional judgement. For each of the four reasons for the delays, we looked at the range of train kilometres per delay across all the different lines and the two years that we have data on. Good performance is generally indicated by a high value for train kilometres per delay as this means that the trains are travelling for longer before they experience a breakdown in service. The 'best practice' approach adopted therefore, examines the performance of the 'best' lines and the characteristics of these lines. If there is no obvious reason why the best performing line should dramatically out perform all the others, the 'best practice' target will be set roughly around the performance of the best line. The intuition being, if one line, with no major discernable advantage, can achieve this level of performance, why can't the others.

The chosen 'best practice' levels of train kilometres per delay are shown in Table 1.1 below.

Table 1.1
NERA's 'Best Practice' Performance Levels

Cause of Delay	Train km per Delay Target	Performance Based On
Signalling	220,000	Northern and Piccadilly
Rolling Stock	350,000	Northern, Piccadilly, Victoria and District
Staff	400,000	Victoria and Northern
Track	750,000	Victoria, Jubilee and Central

The third stage of the process involves a similar procedure as in stage one. By using the actual annual train kilometres and the 'best practice' delay rates, generated in stage two, we can calculate the number of delays that would occur if these performance rates are achieved. This process again involves dividing the train kilometres values by the target train kilometres per delay values. The resulting number of delays are generated for each line and for each reason for the delay. For each of the various reasons for delays, a network wide number of 'best practice' delays is also generated.

Converting the number of delays into a percentage reduction in delays is the final stage and uses the standard percentage formulation. The results mean that a positive percentage means that a line, or indeed the network as a whole, needs to improve its performance, whilst a negative percentage means that the line/network is exceeding its target. In line with the very reason for setting targets, the vast majority of the results require the lines to improve performance.

1.3. Summary

The analysis generates targets for each individual line, and for the network as a whole, in each of the four key areas that cause delays.

Compared to performance in the year 2001/02, the targets require the network to reduce total delays of more than 15 minutes by 67 per cent.

In practice this might be regarded as an ambitious target within the period of five years, so we suggest that the Scrutiny Committee recommend a target of a 30 per cent reduction.