

# Workload Principles

## Instructions and Guidance

### Purpose of the Tool

There are a number of generally accepted ergonomics principles for work system design, which if applied, avoid a mismatch between people's capabilities and their work, enabling them to complete the work safely and efficiently without negative impact on their well-being. These principles have been assessed in the context of understanding signalling workload to provide a set of specific signaller workload principles.

The Workload Principles Tool therefore provides an assessment of the work system in relation to the degree to which it meets each of the ergonomics principles in order to contribute to a total understanding of signaller workload. For any particular workstation, inadequacies of the ergonomics factors embedded in these principles will be likely to increase workload experienced by the signaller. Therefore the extent to which the principles are met is an indication as to the impact workload is having on the signaller's ability to perform safely and efficiently.

### Using the Tool

The Workload Principles Tool is available as either a laminated hard copy or electronically. Details describing how each principle is related to understanding the signaller's workload and the type of human factors issues that are relevant can be found with the electronic version and in the workload principles booklet. You should make yourself familiar with these prior to using the tool.

This tool can be used either:

- at the start of a workload assessment to help define the nature of the workload problem or to contribute to a preliminary assessment of workload, or
- assist in the judgement of findings obtained from a more in depth study of the influencing factors.

Using the tool simply involves considering all the information obtained through observation or discussion with the operating staff and identifying whether each principle is met. A yes or no answer should be given to indicate whether the principle has been met.

Principles 1-5 and 9 are primary principles and are essential for safety and performance. If they are not met then remedial action is required. The remaining (secondary) principles are desirable; if it is apparent (either through observation or suggestion by those working or managing the workstation) that these are not achievable then further investigation would be necessary, although failure to meet the primary principles would obviously take greater priority.

### Data management

The Workload Principles table, when completed, should suggest which principles have and haven't been met. Within the workload report evidence to justify why a principle has and has not been met should be provided. An example is provided below.

Workload Principles	Assessors Comments
1. Signallers are able to maintain sufficient concentration to their tasks without undue distractions.	The timetable changes have created a situation whereby the signallers now have an extended period of monitoring which appears to be reduces their levels of alertness and making them prone to distraction so that they are unable to switch efficiently to the busy period of the timetable.
9. Equipment that impacts on the signaller's role is reliable and performs to assist signaller's tasks.	Buttons have broken off the new NX panel which increases difficulty in its use

All data should be reported back to Network Rail, Ergonomics team to allow for further analysis and validation of the tool.

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## **Limitations**

The judgement of the workload and working arrangements of a signaller can be facilitated by the use of these principles. They have been found useful, meaningful and generally consistent with other observations made during a number of workload assessments of signal boxes. Both human factors and operational experts have reviewed them and a paired comparison exercise has been completed to understand the significance of each principle; therefore a certain level of validation has been carried out. However, they do rely on the judgement of the investigator to state whether each principle is fulfilled or not. This judgement is only as good as the skill of the investigator and the quality of the information gained from signallers and their signalling manager.