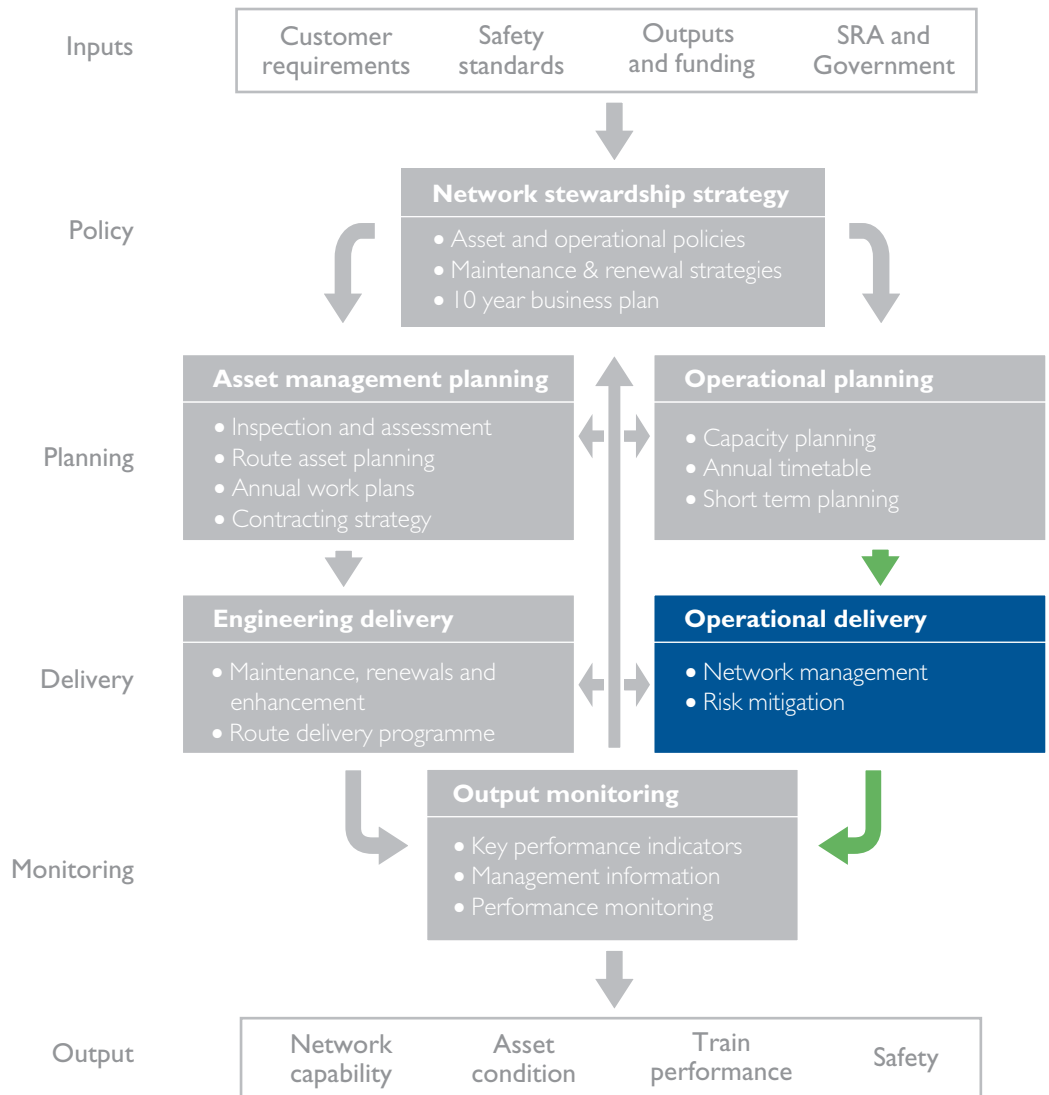


# Section 7

## Operational delivery



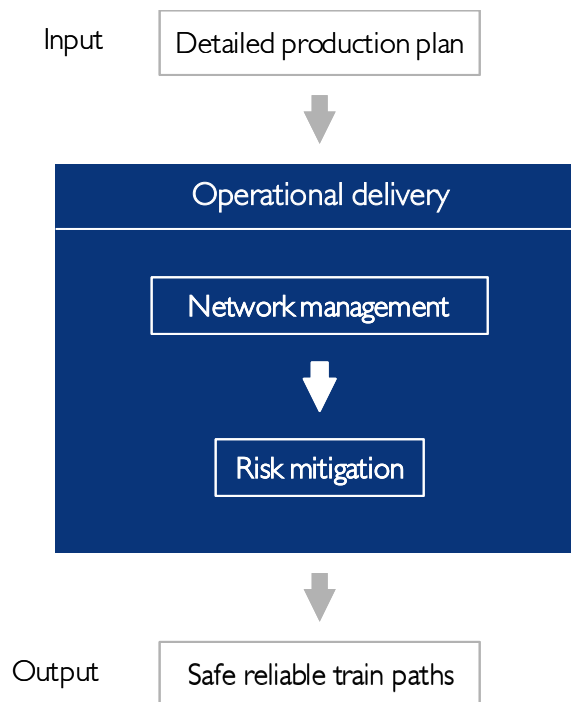
## Introduction

Operational delivery is concerned with the provision of safe and reliable train paths to customers in accordance with the detailed production plan developed by the operational planning process. A key element in delivering safe performance is the reliability of the infrastructure through the asset stewardship and engineering delivery activities described in earlier sections. The key dependence for Network Rail is the reliability and consistency of train operator resources such as train crews, station staff and rolling stock.

## Approach

Building on the foundation of a robust timetable and an increasingly reliable infrastructure we will ensure that our daily operations are efficient and effective and that incident recovery response is robust and timely. The key elements of this process are illustrated in the figure below.

**Figure 7.1** Operational delivery



Our long-term aim is to maximise the efficiency and effectiveness of operational delivery through:

- network management – reliably delivering the train plan in real-time by ensuring that our signalling staff are equipped with the right information and tools and supported by world-class proactive network control;
- risk mitigation – minimising the potential impact of external factors (such as severe weather) on the operation of the network by accurately assessing, mitigating and managing the risks; and
- monitoring and feedback – by having in place the appropriate processes to understand trends and enable rapid identification of the actions necessary to prevent recurrence of an adverse impact on train performance.

In this section we highlight areas in which we will carry out work to improve operational processes, identify our goals for the future and set clear priorities for actions to address shortcomings in existing processes.

Key priorities for action over the next 12 to 18 months to deliver our goals are:

- delivering a range of initiatives targeted at reducing delays including train delays, weather, bridge strikes, crime and fires and other unplanned events;
- completion of a comprehensive review of the roles and responsibilities of operational staff;
- implementation of the newly developed Professional Signalling Guide, providing practical support to new signallers and continuous professional development;
- maximising the use of appropriate technology, such as simulators, laptops and touch screen technology;
- ongoing development of the operations and control manuals;
- implementation of the solutions to improve train regulation;
- standardising control procedures and responsibilities within a single framework;
- continued focus in embedding Service Recovery 2003 into the daily business; and
- implementation of the network control strategy, including organisation, process and information system requirements, to deliver our vision for world-class proactive control.

# Network management

Network management is the real-time process by which we monitor and control the movement of trains on our infrastructure, with the primary objective of maximising the delivery of services in accordance with the timetable. As incidents occur, the network management function controls and manages the problem, returning the train service to its planned state as efficiently as possible. Network management is crucial for minimising train delays and delay per incident.

There are two principal elements to network management:

- signalling operations – this is the primary process by which we control the movement of individual trains. The various types of signalling systems are operated by individual signallers, enabling train movements to be made in accordance with the train plan, and determining (in situations where competing demands are being made) which trains have priority; and
- network control – staff in control centres monitor network operation across a wider area than is covered by individual signallers. They plan and coordinate with train operators real-time changes to train operations made necessary by network availability restrictions and they oversee arrangements to restore network availability after incidents such as infrastructure or train failures or external events.

These signalling and control functions are supported by front-line operations activities such as incident response and regular operations system inspections. Taken together, these functions have a significant contribution to make to network performance. Any failure to recover the network as efficiently as possible after incidents can influence delay per incident trends. The various initiatives described in this section are intended to identify and deliver improvements in network management processes in order to deliver improved operational performance.

## Signalling operations

### People

The skill and expertise of our front-line operations staff are critical to our future success and we are progressing a number of initiatives to address this:

- competence requirements will be defined for the key operations management posts with a safety responsibility during the first half of 2004 allowing for the introduction of an improved corporate training and development strategy;
- a Professional Signalling Guide has been issued to all signallers. This is being supported by a mentoring scheme so that newly appointed signallers will be able to draw upon the knowledge and skills of experienced colleagues during the early period of their appointment;
- reviewing the continuous professional development of all signalling staff to ensure that they achieve and maintain the optimum skills level;
- a significantly improved process for assessing signallers' competence;
- improved succession planning to ensure that we maintain a steady flow-through of experienced signalling and control staff;

- the introduction of the operations apprenticeship scheme and the encouragement of incoming graduate trainees to pursue a career in operations. A training and development plan will be produced for each of these individuals to deliver the competence and experience that they will need to take up these positions; and
- working with our colleagues at National Task Force we are developing a cross industry development programme.

## Technological support

The scheme to develop and deliver new signaller simulation equipment is well under way. These will allow all signallers to practise working in a range of disrupted service and emergency situations. This will significantly improve their ability to take prompt and effective action should a real-life incident occur. The first simulators will be introduced to key signalling centres in April 2004 and should be in place across the whole of the network by June 2005. We are introducing touch screen technology to reduce the administrative burdens upon signallers and consequently allow them to concentrate on their core signalling role. The use of toughened laptops has reduced the time lost through being unable to access IT systems remotely.

## Standard procedures – operations manual

A review of the best practices in place across the company has led to the development of a new operations manual for company-wide use. The operations manual sets out instructions to front-line operations managers and staff who are responsible for managing all incidents which occur on our infrastructure. This covers a wide range of core operational tasks, including level crossing inspections, hazards reporting, record keeping and the post incident management of staff. It mandates correct processes and procedures across the company. The next release is scheduled for April 2004.

## Train regulation policy

Train regulation is a key part of the signaller's role. It is a necessary activity when trains are running outside the planned schedule and are causing pathing conflicts.

The Track Access Conditions set the train regulation objective of striking a fair and reasonable balance between:

- minimising overall delay to train movements;
- minimising overall delay to passengers and time sensitive goods;
- maintaining connections between railway passenger services;
- avoiding undue discrimination;
- protecting the commercial interests of Network Rail and each affected train operator; and
- the interests of safety and security.

Our existing regulation policy was introduced in 1996 in response to the changing shape of the industry following privatisation. There are three policy levels:

- level 1: generic instructions applicable at any signalling location, which is the default policy;
- level 2: instructions for generic groups of train services applicable at a particular location where trains may be regulated; and
- level 3: instructions for specified trains (by unique identifier) at particular locations where trains may be regulated.

In practice, the application of the policy has become more challenging with the increased range of speed and acceleration characteristics of new trains, and with changes in the access rights of separate train operators and there is widespread industry recognition of the need to alter policy to take account of these factors and a need to simplify and aid the signaller's task. Following discussion within the industry via the National Task Force, we have committed to the rapid development of a revised train regulation policy that will comprise three key components:

- a generic regulation statement, applicable across the network, that defines the regulation objective and the criteria to be applied by signallers in arriving at regulation decisions;
- the introduction of margin tables as a key information aid to signallers that readily identifies the relative performance characteristics of particular traction types and available infrastructure for regulation purposes; and
- the introduction of an industry-agreed protocol for the management of long-distance trains on the network. Such a protocol will recognise that long-distance trains are vulnerable to a series of uncoordinated localised regulating decisions that have a tendency to transmit reactionary delays across the network.

It is our aim that the new policy and its component parts should be developed in time for progressive introduction, commencing May 2004, providing for some pilot trials and evaluation of the new policies.

It is recognised that development of a new policy is only a first step towards making a material difference to train performance. Our plan is to use the policy to frame specific competence development and training for our signallers and controllers in the application of the policy. These competences will be a part of the training and development programmes for these key groups of staff referenced elsewhere. Implementation of the policy will also require us to address the variable nature of the inter-relationship between the control and signalling functions across the network. Our control strategy, described below, will define this inter-relationship on a consistent basis.

## Network control

Network control processes are governed by the objective, set out in the Track Access Conditions, of striking a fair and reasonable balance between the interests of passengers and freight customers in relation to:

- safety and security;
- maximising the number of passengers carried by available railway vehicles;
- the minimisation of journey times;
- the completion of through journeys;
- the need to keep passengers moving towards their destinations, including by use of buses or alternative routes;
- the need to keep time sensitive goods moving towards their destinations, including by use of diversions or other modes of transport; and
- the minimisation of costs to affected train operators.

This section describes existing initiatives and future plans to improve the efficiency of network control.

## Standard procedures - control manual

Following a review of the best practices in place across the company a new control manual has been developed and came into effect in January 2004. This provides for the first time a single handbook of control procedures and responsibilities, replacing a large number of different manuals and separate instructions across the network. The new manual will help ensure that all our staff follow the same processes, thereby providing greater consistency for our customers across control area boundaries, and that those processes represent current best practice. This manual will be regularly reviewed on a twice-yearly basis to maintain compliance with standards and to allow its continuous improvement.

Work on the separate training manual and competence assessment process for controllers is expected to be complete by the end of September 2004. The latter adopts a train operator best practice format as part of an industry initiative. Development of improved incident response and communication processes prompted by the trends in delay per incident will be a key feature. Measurement of incident response times and communication on a consistent basis using Six Sigma methodology will enable root cause analysis and targeted learning for subsequent incidents.

## National Control Centre

The responsibilities and capabilities of the National Control Centre (NCC) have been developed to provide a central control facility for the network as a whole. Previously confined largely to collating information on the network from regional controls, the NCC now has the capability to coordinate more effectively pan-regional services and network incidents crossing regional boundaries. This has been supported by the introduction of touch screen systems linked to up-to-the-minute information on train movements. The application of this capability will be developed on an ongoing basis.

## Industry control initiatives

We are working with train operators on a new control strategy that addresses co-location and the integration of control room roles and responsibilities.

## Service recovery

Last year's plan described how the duration and impact of incidents affecting network availability was (and continues to be) a matter of industry concern and how a new industry code of practice, Service Recovery 2003, had been introduced from February 2003. This set out the process to be followed in the event of an incident, bringing together all of the affected parties, via a telephone conference, and putting in hand arrangements to implement the agreed contingency plans. A code of practice set out the basis upon which scheduled services can be cancelled in order to facilitate return to the scheduled timetable. Radically simplified arrangements for the dispensation of TOC cancellations have been agreed with the SRA to improve the scope for train operator cooperation.

Since its introduction, we have taken action to ensure the processes are followed as a matter of course whenever a significant incident occurs. The management of incidents is an area of increasing focus and we have instituted a formal incident review process wherein our general managers have to assess, amongst other things, the effectiveness of the service recovery arrangements. The implementation of the crucial service recovery commencement time is monitored and reported to the National Task Force as a key performance indicator in its performance dashboard. The formal incident review process has now been operating for some months.

## Future network control strategy

A key issue for us is the extent to which controllers are able to identify and mitigate delays before they happen, rather than respond to incidents. Whilst this capability has existed historically, the service experienced by the train operators, has varied across the country. We have a vision of a world-class control facility, well equipped with current information on the status of the network. Controllers need good visibility of information on both train delay and on the status of system-critical factors, such as possessions, plant and equipment and external impacts, which need proactive management to control their train performance impact. Train delay data is currently available to certain levels of detail, but there is significant scope to develop better-structured information systems and processes using modern technology and improved processes and procedures. The aim is to provide a central facility that has visibility of all key assets and their availability.

Having the plan available in the same format as we operate is an operational requirement. For example, with possessions included in the plan, and information on network faults available in real time, it will be possible to work to the plan, amend it or select effective contingencies much more efficiently than is possible today. We have developed this control centre vision and a strategy for implementation to meet the real-time operational information needs described above. The network control strategy will include the scope, organisation, processes and information system requirements.

Work has already started and we have control rooms in a number of locations where our staff are co-located with train operating company staff, which are summarised in the table below. There are a number of other locations where Network Rail and train operator control centres are in the same building and we are seeking to exploit these opportunities. Further work is progressing on the introduction of the concept of the single network controller for each route. In the coming year we will build further on this concept.

**Figure 7.2 Co-location of control centres**

Location	Co-located parties
Liverpool Street IECC	Network Rail, First Great Eastern, Anglia Railways, Hull Trains, Balfour Beatty
Upminster IECC	Network Rail, c2c
Sandhills IECC	Network Rail, Arriva Trains Merseyside
Waterloo	Network Rail, South West Trains
Swindon	Network Rail, First Great Western
Buchanan House, Scotland	Network Rail, Scotrail, First Engineering

## Delivery groups

Local delivery groups are multi-functional teams, which bring together key staff at local level, including representatives of train operators. Where delays are caused by infrastructure, the local group analyses individual asset failure histories and makes a forecast of future behaviour in order to establish the optimal means of improving performance. The process leads to local programmes for performance improvement, including small-scale investments, such as points or track circuit equipment upgrades, enhanced maintenance for key assets at critical locations (known as “golden assets”), and railway crime initiatives. For each performance improvement opportunity identified, we appoint a responsible manager for delivering each project and establish a target reduction in delay minutes. This provides accountability to local teams, who are best placed to identify, prioritise and implement detailed opportunities in their area.

We will review the efficiency of the delivery group process in 2004/05 alongside the implementation of the new organisation and to take account of the impact of our performance improvement plan. The increasing adoption of Six Sigma methodology, leading to the identification of strategic solutions to generic performance issues, is likely to alter radically the role of delivery groups.

## Mitigating performance risks

One of the key aspects of delivering a safe and reliable rail service is to ensure that we identify the key causes of delay and disruption and, through that, take action to mitigate risks. The asset management, engineering delivery and operational planning processes described elsewhere in this plan, together with the network management initiatives described earlier in this section, will contribute most of the performance improvement over the life of the plan. This section is concerned with the mitigation of other significant, but largely external, risks to network performance.

### Mitigation of severe weather and autumn impact

Severe weather, preventing normal use of the network and causing damage to structures and embankments, represents an increasing risk area to performance delay minutes. Weather-related delays increased by 50% in 2002/03 compared to the previous year. Significant delays were experienced in 2003/04 resulting from the impact of higher than average temperatures.

Whilst underlying weather conditions are beyond our control, we are liable for any resultant delays. We therefore take extensive measures to mitigate the impact of adverse weather on our infrastructure. A new company specification, RT/LS/S 021 "Weather – managing the operational risks", was introduced with effect from 1 October 2003. This document sets out the requirements for adequate planning, a consistent interpretation of weather elements, and the categorisation of weather into three alert levels. This specification is a benchmark for all issues where weather impacts upon the railway infrastructure, irrespective of whether the root cause is natural elements or infrastructure led. For example, we are continuing work to mitigate the impact of storms and flooding with attention to drainage and structure reinforcement at known risk sites. We are also reassessing the overall risk to our infrastructure in light of significant changes in weather patterns.

A significant increase in awareness of the impact of weather was achieved during 2003. This initiative will continue in 2004 with emphasis on adherence to the management processes, such as the seasonal working arrangements and the seasonal management plan that is being overhauled in line with the company's investment authorisation process. The regional organisation template, introduced in summer 2003, provided a local focus to co-ordinate planning and building on good practice use of meteorological expertise to improve our short-notice preparation both for adverse and for severe weather. The programme for re-structuring the company will see a strengthened and dedicated team to provide a national lead on seasonal management to support the outputs required from this workstream.

The strategic lead for improving management of seasonal issues is being taken through our performance action plan. Particular focus is being given on those events that are responsible for 70% of the performance minutes lost to Network Rail; leaf fall, heat, severe weather, flooding, earth slips, snow and railhead treatment trains. We will use a range of analytical tools to identify root causes of such problems so that long-term solutions can be implemented.

We will continue to undertake special seasonal preparedness reviews, including for extreme weather conditions. We intend to develop more sophisticated route-focused weather forecasting and weather impact measurement for this purpose. It is our intention to continue with cross-industry conferences to ensure all of our initiatives build on the successes of the last twelve months.

We will also continue to develop improved processes for resource deployment to combat seasonal problems. Following the introduction of the multi-purpose vehicles over the last three years, we have now started to replace the “heritage” fleet of sandite trains, with a prototype railhead treatment train that has water jetting capability and an increased range. The cross-industry initiative of fitting on-train sanders has been continued, and we are using evidence from autumns 2002 and 2003 to work up the case for TOCs extending the fitting of auxiliary tread brakes and wheel scrubbers to certain disc-braked multiple units. The introduction of multiple-units with smart traction/adhesion packages is also being monitored closely to determine the value of such equipment to combat adverse adhesion conditions.

## Railway crime

We are liable for the majority of security alerts, trespass, vandalism, suicides, and fires affecting the network. For example, we are liable for delays caused as a result of fires in factories adjacent to the railway even though they are outside our direct control.

In addition to working closely with British Transport Police, regular police and other agencies, to prevent and mitigate the impact of such incidents, we have a significant number of local initiatives to reduce the number and impact of such occurrences. Our initiatives include enhanced fencing and caging of bridges, the use of helicopter and ground patrols, rapid response teams, CCTV, and community-based projects targeted at educating youngsters about risks posed by the railway. Our activities align to the industry’s “4Es” strategy, (i.e. enabling, education, engineering and enforcement.) We will continue to play an active part in the industry’s National Route Crime Group, with front-line activity devolved through regional route crime managers working closely with their operational colleagues.

We will also continue our dialogue with other industry partners and the civil authorities to understand how adequate access can be provided for scene of crime and other forensic investigation following train incidents and personal injury on the railway, whilst minimising the impact upon restoring normal services.

## Fires

Fires are a significant safety and performance risk. In 2001/02 around 2,000 fires cost the company over £7 million in performance penalties alone. A project has been established to address this problem. The first phase is complete. The second phase will be a quantified risk assessment of all our assets that constitute a fire risk and identify control measures where the risk is not already as low as reasonably practicable (ALARP).