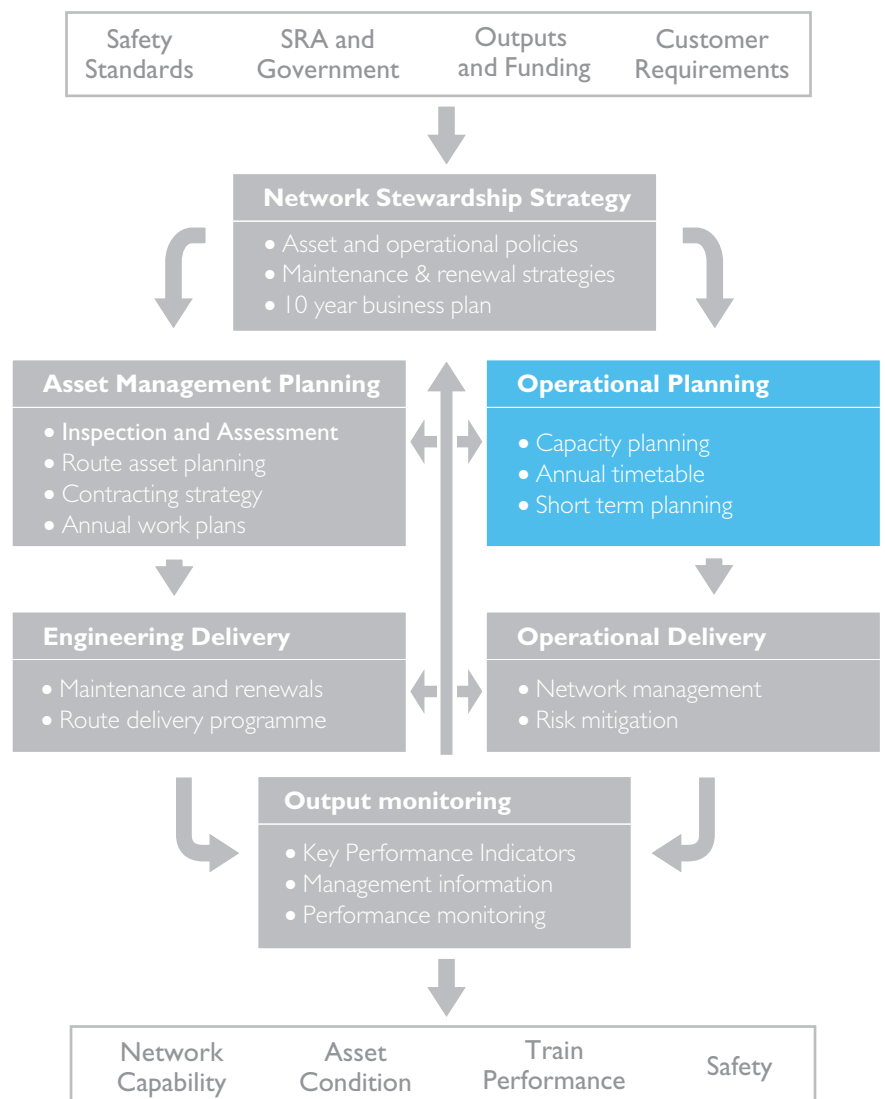


Section 6

Operational Planning

This section covers the translation of customer requirements into detailed plans for the provision of safe and reliable train paths; including long term capacity planning, production of the annual timetable, and short term access planning which incorporates temporary changes into the timetable. The final output of the Operational Planning process is the detailed train plan, which is used by our front-line production staff and train operators to deliver the real-time operation of the railway.



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Objectives

Operational Planning is the process which translates customer requirements for access to the network into detailed plans for the provision of safe and reliable train paths.

Delivering these requirements ensures that we are compliant with our network licence and the cross-industry Track Access Conditions in respect of:

- the production of the National Rail Timetable (Licence Condition 3);
- the timetabling process (Access Condition D); and
- the Informed Traveller process (Licence Conditions 3 and 9).

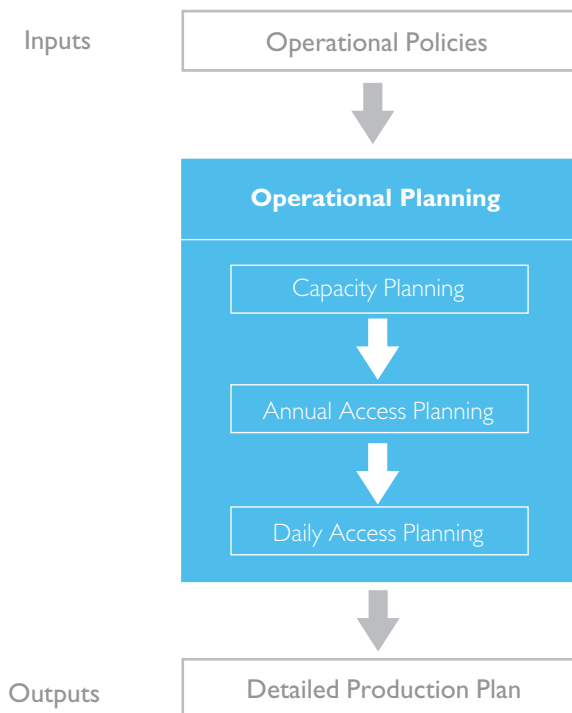
Approach

The Operational Planning process must ensure at every stage that there is an appropriate balance between the requirements of train operators to provide train services and the need to maintain, renew and enhance the network. Also, a proportion of capacity must remain unoccupied to enable recovery from any disruptions to the plan.

Our goal is to implement an efficient and effective Operational Planning process, with three key components, see the figure below:

- robust capacity planning over a 10 year horizon to ensure that plans for provision of network capacity and plans for train services which will consume that capacity are synchronised and are aligned with customer and stakeholder expectations;
- annual access planning which produces the “permanent” timetable, published as the National Rail Timetable (NRT), which provides a sound basis for delivering train paths safely and reliably; and
- efficient daily access planning which incorporates temporary changes into the timetable to meet short-term traffic demands and requirements for engineering works on the network, while ensuring that the timetable remains robust.

The final output of the process is the detailed plan which is used by our front-line production staff and train operators to deliver the real-time operation of the railway on each individual day.

Figure 6.1 Operational Planning

In this section we identify the historical shortcomings in the process, set out our long-term goals and set priorities for action over the next two years.

The historical shortcomings identified are:

- inadequate understanding of future traffic patterns, whether arising from existing commitments or changing customer requirements;
- gaps in our modelling and strategic access planning systems capability;
- outdated rules and standards used in timetable construction;
- late availability of engineering access requirements and short notice change requests;
- a labour intensive and inefficient timetabling process;
- failure to meet the required timescales for notification of timetable changes (Informed Traveller); and
- validation of train paths only partially completed prior to operation.

Over the next two years we have identified priority actions to deliver our goals:

- working closely with the SRA to support its Capacity Utilisation Policy and to develop Route Utilisation Strategies which optimise capacity usage and clarify future requirements;
- completing development and implementation of a suite of Strategic Access Planning tools and systems to ensure the impact of changing capacity and traffic patterns is understood prior to timetable development;
- continuing review of the rules on which timetables are developed, in conjunction with the SRA;
- national coordination of regional Integrated Planning Units to ensure the improvements in engineering planning also benefit the timetabling process;
- begin a comprehensive overhaul of our timetabling systems and tools, which is scheduled to continue until 2007; and
- contribute to an industry-wide recovery plan to meet the Informed Traveller timescales, through improved engineering planning and cutting process cycle time.

In addition, we will implement EU Directive requirements to move to a single annual timetable change each December.

Capacity Planning

Customer/Funder Requirements

The SRA, Scottish Executive, Welsh Assembly and PTEs, together with train operators, need to be able to plan their long-term businesses with some certainty regarding the availability of future train paths. Consequently we need to maintain a view of the capacity which will be provided by the network in the future and how that capacity will be allocated. Although it is important to have a plan for the future physical configuration of the network, the available capacity cannot be understood without analysis of the likely pattern of train services. An important element of Operational Planning is to plan future capacity, in conjunction with customers and stakeholders.

Future capacity planning is also required to meet our licence conditions and to enable us to prepare our business plans.

Capacity Utilisation Policy

In 2002, the SRA published its Capacity Utilisation Policy (CUP) for consultation with industry parties and funding bodies. The CUP consultation document envisages that the SRA will produce a National Network Utilisation Strategy, comprising a Long Distance Statement (LDS) and a series of Route Utilisation Strategies (RUSs). The purpose of the LDS is to define a national framework of long distance passenger and freight services around which future timetabling specifications will be constructed. The RUSs will develop in more detail the specification for all services required on particular routes and will cover all parts of the network in due course.

We are working closely with the SRA to develop the CUP and a pilot RUS for the Midland Main Line route. The SRA is leading the work programme and providing analysis of market demand and customer requirements whilst we are contributing timetabling expertise and detailed knowledge of network capability and performance delivery. In addition, we are ensuring that adequate provision is made for maintenance and renewal work at an early stage in the development of RUSs.

We expect to continue to make a major contribution to the development of the LDS and RUSs. The timetabling work in collaboration with the SRA is supported by a range of modelling tools and it is intended to develop and improve the suite of tools to enable greater automation and efficiency.

Strategic Access Planning

We are developing improved processes for planning access to the network at a strategic level, with a 10 year time horizon. These processes will be undertaken by our Strategic Access Planning Unit (SAP), which was created in 2002/03 and is staffed by a mix of experienced train planners and new recruits to the industry. The work of the SAP team complements the SRA's work on their CUP for the network and will provide an important input to the industry's long-term plans.

A Forward Capacity Plan (FCP) is being created which will contain details of access rights sold (or expected to be sold) to train operators, expected access requirements for maintenance, renewal and enhancement work, details of the available network capacity and constraints on its use. The FCP will be underpinned by a series of future timetable and infrastructure configuration options, which will demonstrate that its content is internally consistent, that the level of performance is deliverable and that it incorporates the emerging SRA work on RUSs. The FCP and underpinning timetables will provide a practical view of the means by which the SRA's overall growth forecasts for the industry might be achieved and will allow necessary infrastructure changes to be identified.

The FCP will be updated at regular intervals and there will be a clearly defined process for evaluation of all proposed changes to ensure that they are operationally viable and that planned use of the network is optimised. This evaluation process will follow the established steps for evaluation of investment schemes from pre-feasibility stage through to detailed design and will include identification of the impact of each proposal on safety, performance, earnings, operating costs and compliance with contractual and Passenger Service Requirement constraints.

A provisional FCP was created during 2002/03 and work on the underpinning timetables to verify its deliverability is expected to continue throughout the next two years. Our further work on the FCP will include the creation of a Capacity Register as required by ORR.

Future Timetabling Exercises

The SAP unit carries out specific timetabling exercises where significant changes to service levels or infrastructure are proposed by the SRA or others. This scheme evaluation process exists to ensure that options can be compared and decisions made on a firm basis. A range of techniques are used to provide an appropriate level of evaluation at the key stages in development of a scheme through feasibility study, option comparison and selection, single option development and detailed design. At the early stages, automated construction of outline timetables is carried out using the Capacity Management Suite (CMS) decision support tools to enable rapid evaluation of a large range of options. In most cases, final confirmation that a particular timetable is actually deliverable requires preparation of a sample timetable by traditional manual means. At the present time, a major exercise is in progress to determine the detailed service pattern to be provided on the West Coast Main Line on introduction of the route upgrade in September 2004. This work will feed directly into the normal annual timetabling process at the Timetable Conferences in June and October 2003.

We intend that this type of advance timetabling should be carried out in future for all major service changes to ensure that there is adequate examination of alternative timetabling solutions, and to allow the annual timetabling process to focus on improvements to timetable quality and resilience rather than basic service design.

Structural Improvement of the Timetable

We have commenced a thorough review of the basis on which the timetable is constructed with a view to improving its robustness and hence that of operational performance. This work is being carried out in conjunction with train operators and the SRA. The main elements are:

- updating basic data in the Rules of the Plan, such as point-to-point running times and standard station dwell times, to take account of current operating conditions and passenger loadings. Changes are based on theoretical considerations, analysis of computer records of historical operating performance and direct measurement by stopwatch;
- revision of standards for addition of performance allowances to take account of day-to-day variations in operation and minor incidents;
- route-by-route analysis of the impact of revised base data and allowances on service patterns and performance levels; and
- evaluation of alternative service patterns where necessary to deliver satisfactory operational and commercial performance or where the existing service structure is sub-optimal.

This review started in 2002 and is likely to continue until 2007 with results being implemented progressively on a route-by-route basis between 2003 and 2008.

There is general support from train operators and the SRA for improvements to the Rules of the Plan so that these reflect more accurately real operational conditions and thus allow a more robust train plan to be developed. There is an expectation that the review will deliver punctuality improvements and will release under-used capacity by implementing a more effective timetable structure. However, in some cases it is likely that published journey times will increase slightly as the effects of professional driving techniques and extended station dwell times due to increased passenger volumes are reflected in the timetable.

Although some opportunities for tactical changes to the Rules of the Plan are being implemented across the network at each successive timetable change, major improvement of the timetable will be focused on a programme of route reviews which will link to the SRA's RUSs and will address overall service pattern as well as Rules of the Plan changes. This process is being carried out jointly with train operators and the SRA and commenced with a review of the Summer 2003 Rules of the Plan for West Anglia routes, the Great Western Main Line (GWML) and the Brighton main line, resulting in a number of changes, particularly on the GWML. A review of the Rules of the Plan on the main Trans-Pennine routes is at an advanced stage and improvements will be implemented in the May 2004 timetable. A programme of route reviews for future timetables up to 2008 is being prepared with the aim of introducing an improved service structure on all main routes, linking where possible to implementation of major investment schemes, introduction of new rolling stock and renewal of Franchise Agreements and Track Access Agreements.

Annual Timetable Planning

Current Timetable Development Process

The current timetabling process was introduced for the development of the May 2000 timetable and is enshrined in the current version of Track Access Condition D. It consists of three phases:

- an initial phase during which the Rules of the Route and Rules of the Plan are prepared;
- a drafting phase during which train operators and ourselves collaborate to produce a Draft Timetable; and
- a bidding phase when train operators submit formal bids to change the content of the Draft Timetable and we make final decisions on the timetable content.

Rules of the Route

Regular opportunities for access to the network for maintenance and renewal work are documented in the Rules of the Route, along with a register of disruptive possessions which are expected to take place during the timetable year. Clearly the Rules of the Route need to be based on a sound understanding of actual possessions requirements. These are currently collated by Operational Planning with input from all possession requestors in the regions and major project teams. An Engineering Conference is held each March which examines the proposed workload for the following timetable year (e.g. the Engineering Conference in March 2002 dealt with possessions in the timetable year May 2003 to May 2004). This Conference coordinates the various work requests and devises an annual possession plan, which can be reflected in the Rules of the Route.

During 2003 Integrated Planning Units (IPUs) are being introduced into the regions and they will have the task of producing a consolidated possessions plan for each region. National coordination will take place through a new National Access Unit (NAU) which will ensure that diversionary routes are protected and that the impact of multiple possessions on long distance train services is minimised. The NAU will also produce the Rules of the Route documentation for consultation with train operators. The Engineering Conference date will move to October this year due to the implementation of standard European Timetable Change Dates from December 2004.

We provide preliminary proposals for the Rules of the Route to train operators approximately 50 weeks before the timetable change date. Train operators are allowed a period of around 4 weeks to advise us of any concerns and to make counter-proposals. We have a further 4 weeks to consider their responses and issue a final version of the Rules of the Route which may be subject to appeal.

Timetable Conference and Drafting Process

The annual Timetable Conference is held in June each year and is attended by all train operators, the SRA and ORR. Its primary purpose is to agree in principle the service changes required on each line of route and to ensure national coordination of those changes. The final day of the Conference is the Priority Date (as defined in Access Condition D) which is the deadline for each train operator to provide us with a formal statement of the contractual rights under its Track Access Agreement that it wishes to exercise in the coming year, any new rights that it wishes to negotiate and the timetable specification which it seeks as an expression of those rights.

The Timetable Conference is followed by a drafting period for the summer timetable of around 14 weeks, during which we construct a draft timetable to meet the requirements set out in the train operators' statements. This involves regular consultation with the train operators and the application of Access Condition D Prioritisation Rules and Decision Criteria.

Bid/Offer Cycle and Publication of the Timetable

Following the issue of the Draft Timetable (currently 32 weeks before the Timetable Change Date), train operators have three weeks to submit formal bids to make amendments and we have 5 weeks to prepare our final timetable offer. The timetable offer is transferred into the Train Service Database (TSDB) which feeds data into the editing and printing system for the National Rail Timetable and a large range of other information systems. A similar process of timetable drafting, bid/offer and transfer to TSDB is repeated for the Winter timetable.

We are required to produce a timetable which honours any firm contractual rights which are declared in train operators' bids. Where a train operator seeks paths in the timetable which are not supported by existing firm contractual rights, those requests receive a lower priority in the timetabling process.

European Legislation

EU Directive 2001/14/EC relating to the allocation of railway capacity took effect on 15th March 2003. It is being implemented on a voluntary basis in the UK pending production of the necessary statutory instruments. The Directive will have a number of important effects on the Operational Planning process:

- from December 2004 there will be an annual timetable change each December and an intermediate adjustment date each June;
- some changes to the sequence of timetable development and the length of each stage will be necessary;
- the Rules of the Route and Rules of the Plan will be incorporated into a Network Statement which will also include other information required by train operators such as physical network data and full details of legal and contractual requirements for access to the network; and
- a formal process for identifying "congested infrastructure" and developing capacity enhancement plans will be introduced.

We have initiated the process for changing Access Condition D to reflect the Directive and it is expected that revised arrangements will apply to the development of the 2004 timetable, with change dates in May and September 2004, full implementation for the 2005 timetable and a single main change date in December 2004. We have produced an initial version of the Network Statement, which was posted on our website in March 2003. It is aimed to fully populate this by October 2003. Initial discussions have taken place with the SRA regarding the “congested infrastructure” provisions and a formal process is expected to be introduced for the May 2004 timetable.

2004 Timetable Changes

The operational planning activity within the industry faces a particular challenge due to the level of service change and process change which will affect the 2004 timetable year. The normal level of timetable change is expected in May 2004, though this is likely to include a range of service changes required by the SRA to deliver economies. The West Coast Main Line upgrade is planned to deliver infrastructure and rolling stock to support a major service improvement from September 2004. In December 2004, we are required to commence annual timetable changes to comply with the EU Directive 2001/14/EC and this is also the target date for major service revisions on East Coast Main Line, Great Western Main Line, South Western routes and in East Anglia. Consequently it will be necessary for the industry to manage three overlapping timetable development processes in the same year. This will require strong leadership from ourselves and the SRA to ensure that service changes are properly coordinated.

Timetabling Process Efficiency Improvements

We recognise that there are significant inefficiencies in the current timetabling process which make it highly labour intensive for train operators and can lead to a sub-optimal product. A major constraint is the present systems configuration of the following main applications:

- Trainplan: which is used to plan the “permanent” timetable;
- Protim 3: seven separate regional systems which are used for short-term planning;
- Aplan: which is used to transfer data to and from train operators; and
- TSDB: used to hold the final train schedules and to transfer data to a range of operational and commercial systems.

Data transfers between these systems are extremely slow and unreliable and none of the systems provides any decision support capability, so identification and resolution of conflicts between different demands on network capacity remains a manual process.

A series of efficiency improvements are being developed which will enable us to shorten the end-to-end timetabling process, create time to carry out important quality checks and save resources. The provisional plan is:

2004 Timetable

- agree changes to Access Condition D to deliver a simplified industry process; and
- introduce automated conflict identification using existing CMS tools.

2005 Timetable

- introduce automated conflict resolution on a limited basis, using existing CMS tools;
- eliminate the seven regional systems by incorporating the required short-term planning and TSDB upload functionality into Trainplan; and
- introduce systematic measurement of timetable quality to inform timetabling decisions.

2006 Timetable

- extend the use of automated conflict resolution and timetable construction (to the extent that this is economically viable); and
- incorporate data transfer functionality into Trainplan to allow abolition of Aplan.

We are also considering the centralisation of timetable planning and full integration of the remaining systems into a single integrated system.

The main benefits are expected to be:

- a reduction in end-to-end development time of seven weeks (2005 timetable onwards);
- improved timetable quality (measured as performance robustness and commercial attractiveness to Train Operators) in the 2005 timetable, with a further improvement in the 2006 timetable; and
- significant staff savings from the 2006 timetable (i.e. in the development process starting in February 2005).

Short-term timetable planning

Rolling Spot Bids

The annual timetable planning process deals with passenger and freight services. Its structure is suited to the needs of passenger operators who require service changes to take place in a coordinated manner at fixed times of the year. It is less suited to the needs of freight operators whose business requirements evolve continuously. These business requirements are met by the Rolling Spot Bid process.

Between completion of the main timetable development phase and the timetable start date and during the currency of the timetable, train operators may submit additional bids and these are incorporated into the permanent timetable so long as they do not result in changes to advertised passenger trains. This process is used by passenger operators to finalise their empty stock workings and is used extensively by freight operators to modify their services to meet changing commercial demands. It is usual for the cumulative changes to freight services in a timetable period to be rolled forward as the planning base for the next timetable period.

Informed Traveller

It is a requirement of our licence and each train operator's licence that daily changes to passenger train times are published at least 12 weeks in advance. This is achieved through the Informed Traveller process as:

- T-26 period possession plans finalised;
- T-22 impact on train services advised to train operators;
- T-18 train operators bid for service amendments;
- T-14 amended train service finalised; and
- T-12 amended train service uploaded to TSDB and available in information systems.

This process is repeated for each week of the year.

In recent months these timescales have not been achieved due to the high level of changes to the possession plan after T-26 to deal with emerging engineering priorities. The industry has agreed a recovery plan which will deliver progressive extension of timescales and enable full compliance to be regained by the end of the Summer 2004 timetable. The key milestones are:

- end of Winter 2002 (May 03) 3 week improvement to T-7
- end of Summer 2003 (Sept 03) 1 week improvement to T-8
- end of Winter 2003 (May 04) 3 week improvement to T-11
- end of Summer 2004 (Sept 04) 1 week improvement to T-12

In addition to these targets, a particular effort will be made to minimise late changes on key bank holidays to enable compliance with Informed Traveller timescales, commencing with the Christmas and New Year holiday period in 2003/04.

We believe that improvement of the Operational Planning element of the Informed Traveller process is possible and a proposal is being developed which would reduce the planning lead time so that the possession plan could be finalised later whilst still allowing train service amendments to be published at T-12. Changes to Access Condition D will be proposed in March 2003 to facilitate this improvement and the reduced timescales are expected to apply from autumn 2003 in respect of amendments to the May 2004 timetable.

Short Notice Train Service Amendments

Following completion of the Informed Traveller process, there is a continuing need to make short-term temporary amendments to the timetable to meet particular commercial and operational needs such as charter trains, test trains, sandite and de-icing trains, movement of rolling stock for overhaul and driver training runs. There is also a continuing need to amend freight train services to meet the business requirements of freight operators.

We deal with most of these changes as individual items in order of receipt. However, a large part of the freight train plan is finalised through a series of commodity-based weekly plans, e.g. the Anglo-Scottish coal programme, and further amendments to them which are handled until two working days before the day of operation.

All the short notice amendments are uploaded into TSDB and a nightly data transfer takes place to provide the daily train plan into real-time operational systems.

The level of freight planning workload in the last few days before the day of operation is such that full validation of all the proposed train paths is not possible and prioritisation on essential checks is necessary. We have recently established a central Short Notice Freight Team to address this workload and quality issue by pre-planning of a range of standard freight train paths on main routes which can be "called off" on a daily basis as required. It is intended to extend this approach to all main short-term freight flows over the next few months.