

Annual Report 2004



Jernbanelinjen

Contents

Time for trains	3
What is Jernbaneverket?	4
Organisational structure	5
Safety	6
Finance and efficiency	10
Operations	10
Maintenance	11
Capital expenditure – rail network development	12
State Accounts for 2004	14
Human resources	16
Personnel and working environment	16
JBV Ressurs	16
Competitiveness	18
Train companies operating on the national rail network	18
Infrastructure capacity – Jernbaneverket's core product	18
Operating parameters	19
Key figures for the national rail network	21
Traffic volumes on the national rail network	23
Punctuality	24
Environmental protection	26
International activities	28
Contact details	30

Time for trains

The past year marked the 150th anniversary of the railways in Norway and proved a worthy celebration. Punctuality has never been better, rail traffic is growing, and in summer 2004 the Norwegian Parliament took the historic decision to invest NOK 26.4 billion in developing a competitive rail network over the ten years from 2006 to 2015. In other words, the anniversary year not only provided the opportunity for a nostalgic look back, but also confirmed that the railways will continue to play a central role in the years ahead.

In line with Parliament's decision, Jernbaneverket has drawn up an action programme which, if implemented, will be the largest programme of investment in Norwegian railways in modern times. By focusing investment on the ten per cent of the network where rail has the largest market base, we can help the country meet the ever greater challenges it faces in the transport sector. This targeted investment programme will also eliminate the bottlenecks that currently affect long-distance services.

Also in 2004, the Norwegian Parliament decided to open up all rail maintenance work to competitive tendering. This is to be done in two stages, starting in 2005. Parliament's decision will also entail the loss of around 1 000 full-time posts on the operational side. This was contrary to Jernbaneverket's recommendations, but now we have to look to the future. The process will affect many of Jernbaneverket's employees, each of whose needs we must carefully consider. We have therefore been working to put in place the necessary support functions, calling in external expertise where required.

Communication is a key word and a challenge for the entire organisation. We

value our good working relationship with the trade unions. The railway has a culture and a historic legacy which need to be managed responsibly.

Rail is a safe mode of transport, as the statistics for 2004 confirm. However, that is no reason to be complacent. We can do better – and we are, every single day. To assist us in this process, we have the attitudes and mindset that each employee brings to the job. We like to talk of ownership, accountability and pride in the job. Coupled with new technology and new procedures, these are the cornerstones of our safety culture.

On 1 December 2004, Jernbaneverket began using the GSM-R cab-to-shore radio system on the Nordland, Meråker, Rauma, Røros and parts of the Dovre line. In 2005, the system will be introduced on the Flåm, Gjøvik and Østfold East lines. Alongside the extension of ATC (automatic train control), GSM-R will improve safety and allow greater flexibility in train operations, benefiting the train companies and Jernbaneverket alike.

Jernbaneverket is approaching the final stages of the largest onshore construction project in Norway, with the new section of line between Sandvika and Asker scheduled to open to traffic in

autumn 2005. This brings us one step closer to our goal of an efficient, modern rail network in the Oslo region. The project has been conducted in an efficient, cost-focused way, which is essential if rail is to enjoy the confidence of funding bodies and the general public.

Society is changing, and with it the public's expectations in terms of service and information. In 2004, Jernbaneverket continued its drive for improvement in these areas. There is a particular need for good-quality public address announcements and information displays. Stations and halts are Jernbaneverket's interface with the travelling public, and the places where much of our reputation is won – a fact we must never forget.

At the turn of the year the number of employees was reduced by 240 to 3152 employees when BaneService became a separate limited-liability company in January 2005.

I should like to thank all our staff for helping to make 2004 a memorable and successful anniversary year for Norwegian railways. Many happy returns – the time for trains has arrived!



Steinar Killi

Steinar Killi, Director General, with a GSM-R telephone. Photo: Øystein Grue



What is Jernbaneverket?

Jernbaneverket reports to the Ministry of Transport and Communications. The Ministry monitors the activities of Jernbaneverket through regular departmental meetings and periodic reports from Jernbaneverket.

Jernbaneverket is responsible for:

- Developing and operating a rail network that meets the requirements of society and the market in terms of safety and quality (punctuality, train frequency, public information, etc.)
- Railway stations and terminals, including public spaces, information facilities, access, car parks and other public facilities necessary for users of rail services
- Entering into track access agreements with train companies running services on the national rail network

- Scheduling and allocation of train paths to train companies
- Managing train traffic on the rail network
- Studies and planning in the rail sector

In addition to the responsibilities listed above, Jernbaneverket is commissioned by the Ministry of Transport and Communications to train locomotive drivers from 1 January 2005.

The national rail network, with its stations and terminals, is a vital part of the infrastructure of society. Development and operation of the network is therefore a socioeconomic task, which has to be viewed in the same context as other socioeconomic activities.

Jernbaneverket aims to help the country achieve its transport policy objectives and to promote rail as a safe, competitive form of transport, forming part of an integrated network.

Photo: Rune Fossum



Organisational structure

The Director General is the chief executive of Jernbaneverket.

The Infrastructure Management

is responsible for constructing, operating and maintaining all rail infrastructure, and for managing real estate, stations and terminals. The Infrastructure Management comprises three regional units, each with overall responsibility within its respective region. A separate unit is in charge of constructing new infrastructure.

The Traffic Management

is responsible for operational traffic management and passenger information services. The Traffic Management comprises three traffic regions, which are sub-

divided into a total of eight train control areas. BaneEnergi operates the transformer stations, selling on electrical power to the train companies.

The Directorate comprises the following departments:

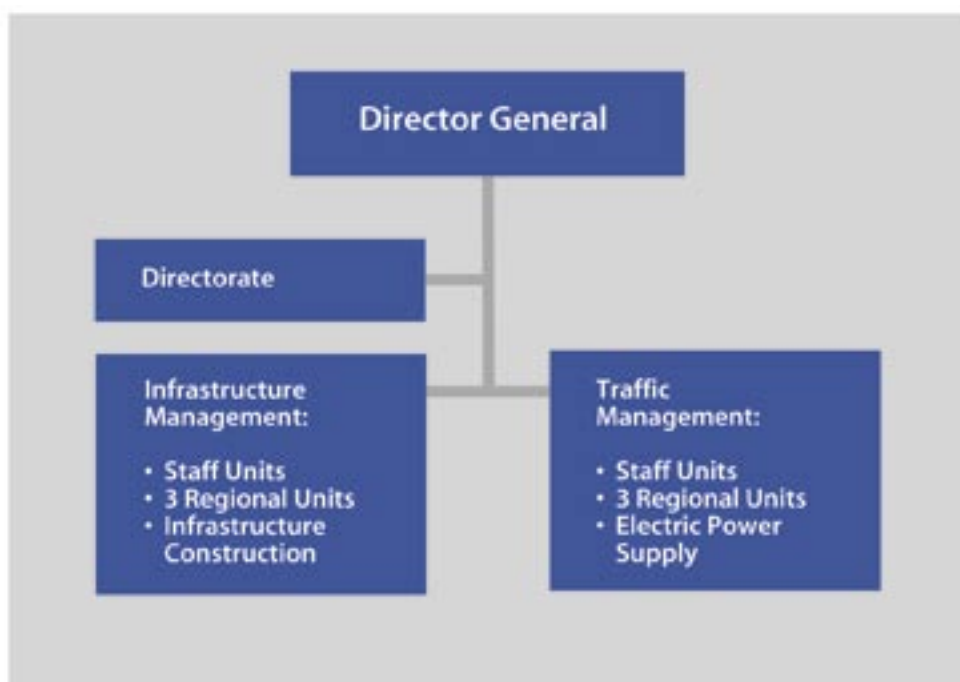
- Safety and Management Development
- Strategic Planning – planning work relating to new infrastructure
- Market Relations and Communication
- Management Control – financial control and accounting
- Administrative and International Affairs – including legal issues

Shared Administrative Services provides accounting, payroll and personnel, archiving and local housekeeping services to all parts of Jernbaneverket. This unit reports to the Administrative and International Affairs department. The Norwegian Railway Museum reports to the Market Relations and Communication department, while the Norwegian Railway School reports to the Safety and Management Development department.

In preparation for the introduction of competitive tendering, JBV Ressurs, a skills centre reporting direct to the Director General, has been set up.

BaneService became a separate limited-liability company in January 2005.

Jernbaneverket's organisational chart at 31 January 2005



Stenrud
S. KILL 04.04.2005

Safety

2004 was one of the best years ever for Norwegian railways in terms of safety. Nevertheless, safety is not something we can take for granted. Safety is something we have to create – and recreate every single day.

Safety management

Transport contributes to society's wealth creation. The value of rail transport is created in a value chain consisting of infrastructure, traffic management and train operations. The risk of harm to people, the environment and rolling stock is the sum of the risk factors from each of these three components and the interaction between them and between transport modes. It is this sum of the risk factors in the rail system that we must control if we are to create and maintain a railway with acceptable levels of safety. By virtue of its responsibility for capacity allocation on the network, Jernbaneverket is in a position to monitor the overall risk at any given time.

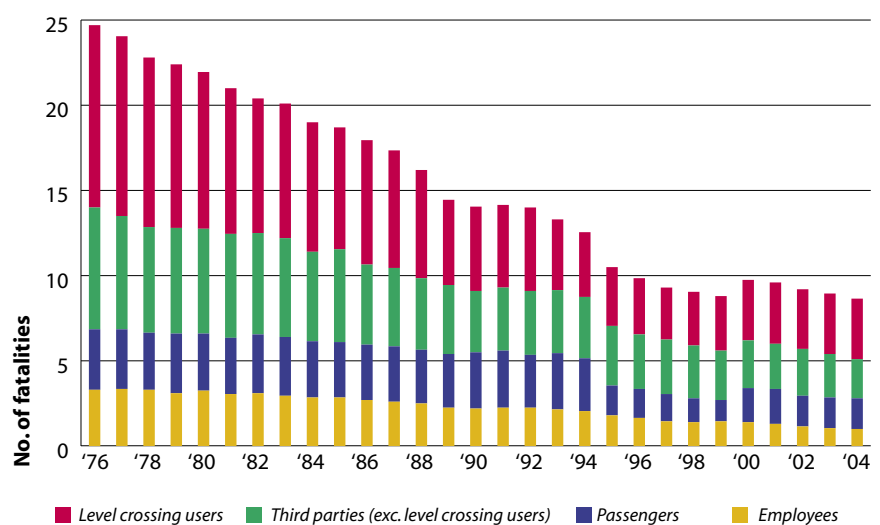
Jernbaneverket sets out the risk profile for the national rail network by conducting line-by-line risk surveys, supplemented by specific risk analysis of any modifications that may affect network safety. Between 2000 and 2004, Jernbaneverket conducted over 800 small and large-scale risk assessments of technical systems, human-machine interfaces and organisational changes. Coupled with the line-by-line surveys, this provides control and an overview of the risk profile.

In the light of analysis findings and past events, Jernbaneverket is focusing particularly on preventing major accidents and on reducing the scope for collisions at level crossings and along the line.

From manual to automated traffic control

Jernbaneverket works on the single-failure principle, which means that no one failure on its own should be enough to cause an accident. Interlockings and technical barriers such as ATC (automatic

Number of fatalities over past 20 years sliding average ¹



train control) comply with this principle and help increase the safety of the rail network. ATC is a technological system for transmitting signalling instructions from the signal to the train. If the train accidentally passes a stop signal, the brakes are automatically applied. ATC provides an additional safety barrier and makes train operations less dependent on human factors. In 2004, interlockings with ATC and CTC (centralised traffic control) were installed on the Spikkestad line, and planning work got under way for the installation of interlockings on the Nordland line.

GSM-R – communications system for rail

In December 2004, Jernbaneverket introduced GSM for Rail (GSM-R) on 40% of the Norwegian rail network. GSM-R is a Europe-wide standard for rail-related communications, and Norway is among the first out of a total of 32 European

countries to introduce the new system.

GSM-R is based on the GSM standard for mobile telephony, but additionally meets a range of requirements on safety and accessibility that are specific to rail operations. GSM-R features include emergency calling, call prioritisation, fast connection and group calling.

The principal function of GSM-R is secure communication between train driver and controller. Controllers can quickly contact the correct train at all times. GSM-R also brings efficiency savings to rail operations in Norway, replacing both the old analogue radio systems and standard GSM phones among railway staff.

GSM-R provides full radio coverage along railway lines and in all rail tunnels. The first priority for installation was those lines that previously lacked an approved emergency communication system. By the end of 2004, GSM-R was in use on the Ofoten, Nordland, Meråker, Røros, Rauma and parts of the Dovre line.

¹ The sliding average for each year is arrived at by calculating the average for the past 20 years.

The introduction of GSM-R in Norway is scheduled for completion by 2007.

Tunnel safety

The Norwegian rail network has more than 700 tunnels, 50 of which are over 1 000 metres in length. In the 150-year history of the railways, there have been no major tunnel accidents in Norway. Nevertheless, Jernbaneverket is improving tunnel safety through a variety of measures in the longest tunnels designed to offset the psychological effects and potential for major accidents associated with long tunnels. The main aim of these measures is to provide better chances of escape and rescue. In 2004, the Ulriken, Arnanipa and Hananipa tunnels were equipped with emergency lighting and signage.

Level crossings

Level crossings have traditionally presented one of the largest risk factors associated with the rail network in Norway, so this has long been a priority area.

In addition to general operational and maintenance work, Jernbaneverket made around 150 major and minor safety improvements at level crossings in 2004. A total of 82 crossings were eliminated during the year. Of the remaining 4249 crossings, a large proportion are disused, or very lightly used, and therefore have little effect on the overall risk profile.

As well as eliminating crossings with the highest accident risk, Jernbaneverket is committed to devising and implementing a range of measures to improve safety at level crossings, including:

- Improving visibility and road geometry
- Working with the Directorate of Public

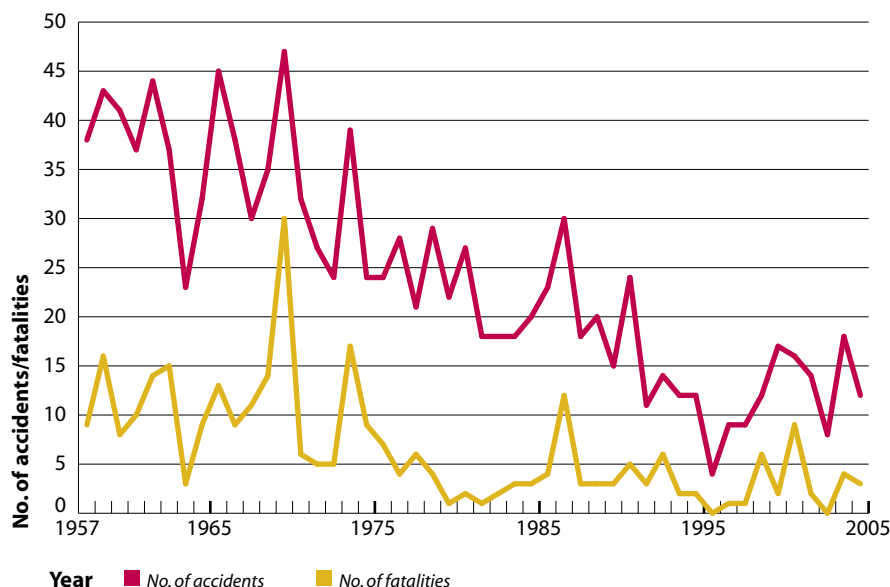
- Roads to improve road signage
- Fencing, locking and temporary closure
- Telephone arrangements for lightly trafficked crossings (trial scheme)
- Installing simple warning lights and related signs at farm crossings

Safety culture

The three-way split between infrastructure, traffic management and train companies, coupled with the increase in competitive tendering on both the traffic and operational sides, is creating a larger number of players within the rail system. Safety management based on understanding and expertise provides a greater degree of security in these circumstances. Risk-based safety management centres on greater involvement of specialist staff in carrying out safety reviews. This will not only ensure that safety increasingly becomes an integral factor in all decision making, but also result in greater understanding and better analysis.

Jernbaneverket cannot on its own guarantee a safe railway. A shared understanding and combined effort by the various players is necessary. The Norwegian Railway School (see page 20) was set up in 2004 and received its first intake of students in January 2005. The school will help foster a shared understanding, shared concepts and improved knowledge of the various parts of the rail system. To this end, joint in-service courses and seminars are also being run. Courses in safety management with participants from various players were held in 2004.

Level-crossing accidents 1957–2004



Operational accidents in 2004

Type of accident	Incidents	Fatalities	Serious injuries ¹
Collisions	21	0	0
Train operations (train/train)	0	-	-
Train operations (train/object)	10	-	-
Shunting	11	-	-
Derailments	8	0	0
Train operations	6	-	-
Shunting	2	-	-
Level-crossing accidents²	10	1	3
Crossings with barriers, lights and claxons	5	1	3
Crossings with gates	5	-	-
Other level-crossing accidents	2	2	0
Rolling-stock fires	5	0	0
Other accidents³	0	0	0
Total	46	3	3

¹ Serious injuries are defined as people deemed unfit to work for more than 14 days after the accident.

² Collisions between road vehicles and railway rolling stock.

³ Other accidents resulting in death or serious injury.

Rail safety

Rail ranks among the safest forms of transport, and the safety trend over the past 20 years has been very positive. Nevertheless, three people died in accidents on the Norwegian rail network in 2004 – two fewer than in the previous year. Two pedestrians were killed at barrier-equipped level crossings (Sandesund, Askim), and the third fatality was driving a tractor that was hit by a train at a level crossing with lights but no barriers. In all cases, the technical systems at the crossings were working properly.

The summary of operational accidents in 2004 shows some improvement but confirms which types of accident dominate the railway's risk profile.

Safety on the rail network

- Lines with CTC* and ATC**
- Lines with train radio (Scanet)
- Lines with GSM-R



* CTC (Centralised Traffic Control) - means that station interlockings communicate with a control centre.

** ATC - (Automatic Train Control) is a collective term for the systems known in Norway as DATC (partial ATC) and FATC (full ATC). Partial ATC is an automatic train-stop system that applies the brakes if a train accidentally passes a stop signal, while full ATC incorporates monitoring of line speed as well (see Railway Statistics 2004).



Installation of a GSM-R mast south of Alvdal on the Røros line. Photo: Øystein Grue

Finance and efficiency

Jernbaneverket's principal objective in the core area of finance and efficiency is to make better use of resources in exercising its responsibilities and conducting its operations.

Operations

Railway operations comprise traffic management and operational activities relating to tracks, stations and freight terminals. Figure 1 shows a breakdown of Jernbaneverket's costs for operations.

Traffic management

Expenditure on traffic management in 2004 amounted to NOK 347m. Traffic management involves the following main tasks:

- Train control and dispatching
- Capacity allocation and timetabling
- Provision of services and information to passengers, the general public, train companies and the media (platform indicators, monitors, signage, information displays, public address systems, online information, etc.)
- Control of the overhead power supply to electric trains

Infrastructure operations

Expenditure on infrastructure operations in 2004 totalled NOK 839m, of which management and support services accounted for NOK 221m.

Premises

Premises costs, which include rent paid to NSB for public spaces at stations, telephone line rental, and electricity bills for light and heating, amounted to NOK 221m in 2004.

Power grid rental

Rental payments to BaneEnergi (Jernbaneverket's in-house electricity supplier) for the supply of traction current totalled NOK 154m in 2004.

Figure 1: Breakdown of operational costs in 2004 (NOK million) ^{1,2}

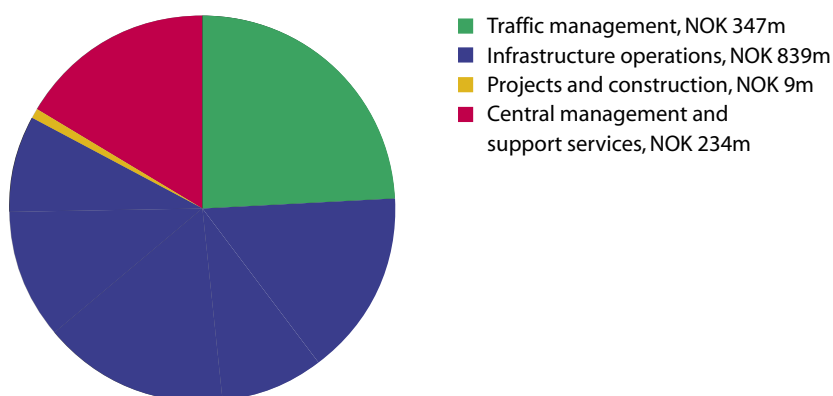
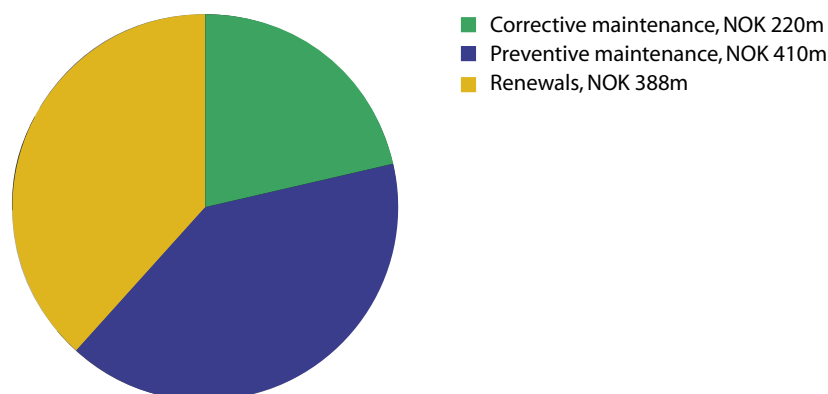


Figure 2: Breakdown of maintenance costs in 2004 (NOK million) ^{1,2}



Snow clearance

Expenditure on snow clearance and contingency measures was NOK 118m in 2004.

Projects and construction

This heading covers ongoing operational activities relating to Jernbaneverket's capital projects, which accounted for NOK 9m in 2004.

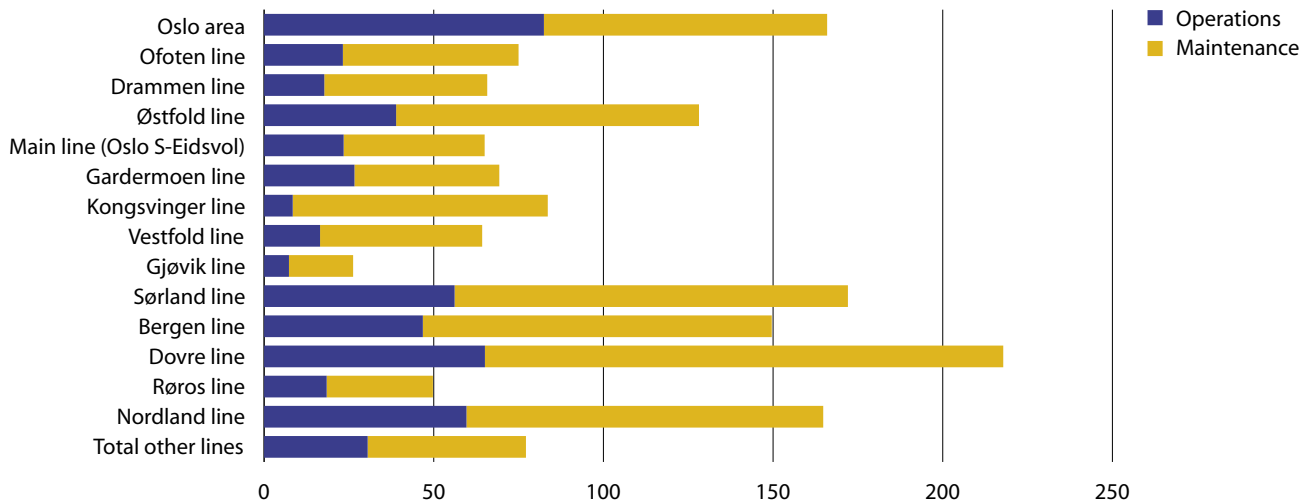
Central management and support services

In addition to the Director General, the Directorate and centrally managed operational projects, this heading covers the operating costs of Shared Administrative Services, the Norwegian Railway Museum and the Norwegian Railway School. This expenditure totalled NOK 234m in 2004.

¹ Figures 1, 2 and 4 exclude operations and maintenance of the Gardermoen airport line.

² Figures 1, 2 and 3 show an estimated breakdown of costs after calculated allocation of indirect costs. The figures do not reflect Jernbaneverket's cash accounts.

Figure 3: Operations and maintenance costs by line (NOK million) ²



Maintenance

Maintenance is defined as activities to maintain established levels of safety and operational reliability, and to maintain the value of technical installations and infrastructure.

Maintenance falls into three categories:

- Corrective maintenance: fault repairs and emergency call-outs
- Preventive maintenance: inspections, examinations, checks, scheduled preventive repairs, overhauls, replacement of components
- Infrastructure renewal: most commonly, replacement of catenary and signalling systems, or complete renewal of sleepers and rails plus ballast cleaning

Jernbaneverket has adopted an overall maintenance strategy for its infrastructure. The process of drawing up maintenance strategies for individual lines is under way. A maintenance management manual has been produced and came into use on 1 June 2004. The manual, which is based on the principle of reliability-driven maintenance, sets out the requirements for “good infrastructure” as guidelines for formulating the line-by-line strategies. The objectives and principles described in the manual will bring a shift in focus from corrective to preventive maintenance and renewal, while improving the condition of the infrastructure.

The following figures are an estimated average for the renewal of core infrastructure components in the years 2002–05:

Replacement of rails	30 km per year
Replacement of sleepers	36 000 sleepers per year
Replacement of points	20 sets per year
Ballast cleaning	65 km per year
Renewal of cabling	60 km per year
Renewal of catenary	40 km per year
Renewal of signalling	2.5 stations per year

The above figures reflect Jernbaneverket’s maintenance plans.

Operations and maintenance costs by line

Lines are prioritised according to expected use of the rail network, expected traffic volumes and socioeconomic benefit. The cost structure is revealed by comparing the unit costs (key product figures) of the various infrastructure components and line sections for the principal activity categories. These key product figures provide a basis for comparing the costs of line sections catering for similar types of traffic, and hence for identifying the sections with the best practice in terms of infrastructure operations and maintenance.

Figure 3 gives a breakdown of operations and maintenance costs by line.

Figure 4: Operations and maintenance costs 1996–2004 (2004 prices, NOK million) ¹

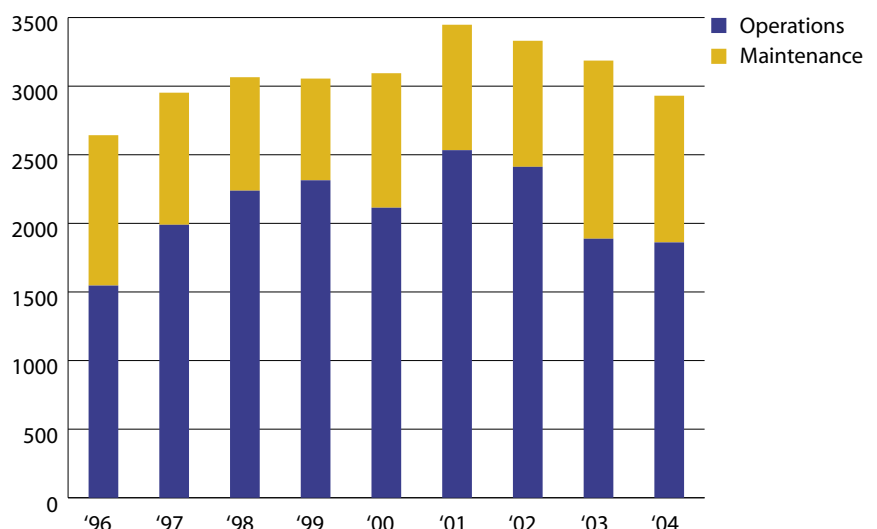


Figure 4 shows Jernbaneverket's operations and maintenance costs from 1996 to 2004.

Capital expenditure – rail network development

Table 1 gives a breakdown of Jernbaneverket's spending and budget allocations under section 1350, item 30 "Investment in railway lines", along with the budgeted cost and expected final cost of the projects listed in Parliamentary Bill No. 1 (2003–04). It also covers projects in Jernbaneverket's four focus areas: safety, environmental protection, capacity enhancements, and stations and interchanges.

Figure 5 gives a breakdown of Jernbaneverket's capital expenditure in 2004 by focus area.

New infrastructure

Sandvika–Asker double track

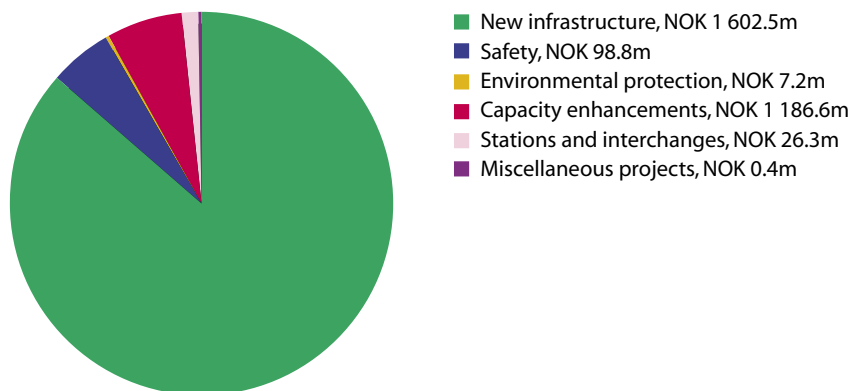
The main objectives of the Skøyen–Asker project are increased capacity, higher train frequencies, improved punctuality and reliability, and shorter journey times. Phase 1 is the Sandvika–Asker section, which comprises 11.6 km of new double track and the remodelling of Asker station.

Construction work was under way in 2004 on all parts of the Sandvika–Asker section. Work on the bridges over the Sandvikselva river and E16 highway, and on major concrete structures west of the E16 including a tunnel through Jongsjordet, was completed in summer 2004. Large parts of Asker station are now finished and in use. Installation of technical systems was under way in 2004 and will be completed over the entire section in 2005. The tunnel works are finished, and Asker station will be completed in 2005.

Lysaker station

The Lysaker station project involves 0.9 km of new double-track line, including a new bridge over the Lysakerelva river. The new railway will be integrated with a new bus station and connect with a people mover serving Fornebu. Under the plans, Jernbaneverket will construct the terminus for the people mover at the same time as the improvements to Lysaker station. Lysaker is a bottleneck among the interchange stations on the Oslo S–Asker

Figure 5: Breakdown of capital expenditure in 2004 (NOK million)



line, so the improvements will significantly enhance capacity on this section.

Lysaker–Sandvika double track

A new double-track line (5.6 km) running direct from Lysaker to Sandvika is to be built. The new line will be in tunnel through the residential district between Lysaker and Engervannet, then run parallel with the existing Drammen line alongside Engervannet lake on the approach to Sandvika station.

Lieråsen tunnel

The aim of this project is to resecure the rock inside the tunnel, so that the original operating specifications in terms of safety, speed and train frequency between Asker and Lier can be maintained. The bulk of the safety-related upgrade involves essential maintenance of the tunnel roof following many years of wear and tear and deterioration of concrete rendering and structures. Measures will also be taken to improve safety during construction and operation, in line with statutory requirements and modern standards. Extensive preparatory works will be carried out on the railway line before work to secure the rock commences.

Sandnes–Stavanger double track

The Jæren line is currently single track with numerous short passing loops. Half-hourly local services operate over the Sandnes–Stavanger section alongside regional services, long-distance services and freight trains.

The project involves upgrading the line to double track between Sandnes and Stavanger (14.5 km) and the associated technical works. This includes building new halts for passenger services with access and parking facilities. The double

track will largely follow the existing alignment, with a few entirely new sections. The existing double track will be upgraded between Kvaleberg and Stavanger.

Ganddal freight terminal

Since the early 1990s, Jernbaneverket has been studying locations and preparing designs for a new freight terminal in the north of Jæren.

The terminal will allow a single train formation to operate from Oslo to Ganddal, unload and reload, and return to Oslo in the space of 24 hours. This will reduce operating and maintenance costs. Calculations indicate that greater flexibility may yield up to 20% growth in traffic compared with the existing Stavanger terminal (in the first phase). Full development of the terminal would create the potential for a further 50% growth.

GSM-R

The GSM-R project involves technology specially developed for voice and data communication in connection with train operations and other railway-related activities. GSM-R will provide a technological basis for cross-border train operation across Europe. The European Union is supporting the development of GSM-R as a pan-European rail technology infrastructure. See Safety chapter, page 6.

Nordland line CTC

Work to install automatic train control (ATC), centralised traffic control (CTC) and new signalling is under way on the Grong–Mosjøen section and scheduled to begin on the Mosjøen–Bodø section.

This will benefit capacity and punctuality. Good punctuality is essential if freight and passenger traffic is to be expanded on the Nordland line. Punctuality can be

Table 1: Capital expenditure in 2004 (NOK million)

	Allocated 2004	Total 2004			Project total		
		Budgeted cost	Accounting cost	Discrepancy	Budgeted cost	Expected final cost	Discrepancy
New infrastructure							
Sandvika - Asker	1 076.0	1 037.7	1 088.1	-50.3	3 755.0	3 740.0	15.0
Lysaker - Sandvika	0.0	10.0	3.2	6.8	2 450.0	2 450.0	0.0
Lysaker station	10.0	28.3	18.4	9.9	763.0	781.0	-18.0
Sandnes - Stavanger	7.0	5.2	5.2	-0.1	1 330.0	1 330.0	0.0
Ganddal freight terminal	3.0	3.0	2.6	0.4	385.0	385.0	0.0
GSM-R	550.0	447.7	438.1	9.6	1 643.7	1 643.7	0.0
Grong-Mosjøen CTC	0.0	6.5	3.8	2.7	132.2	132.2	0.0
Lieråsen tunnel	18.0	13.8	41.6	-27.8	197.4	197.4	0.0
Trondheim control centre	0.0	-1.2	-1.0	-0.2	15.3	15.0	0.3
Other projects	0.0	-1.1	2.6	-3.7			
Total new infrastructure	1 664.0	1 549.9	1 602.5	-52.7			
Focus areas							
Safety	39.4	122.6	98.8	23.8			
Environmental protection	16.0	15.1	7.2	7.9			
Capacity enhancements	93.0	115.0	118.6	-3.6			
Stations and interchanges	16.0	20.6	26.3	-5.7			
Miscellaneous projects	1.8	14.5	0.4	14.1			
Total focus areas	166.2	287.8	251.3	36.5			
Net capital expenditure	1 830.2	1 837.7	1 853.8	-16.2			
Section 4350, items 02-18	0.0	0.0	4.1	-4.1			
Capital expenditure, item 30	1 830.2	1 837.7	1 857.9	-20.2			

improved whether CTC or manual dispatch is used, but the costs in the event of disruption tend to be considerably lower on sections with CTC. A key element is the flexibility of the CTC system and its ability to accommodate delays, which also brings benefits in terms of operational efficiency.

Focus areas

Safety

Jernbaneverket has a responsibility to rail users, third parties, its staff and society at large to ensure that railway operations do not result in loss of human life, serious human injury, or serious damage to rolling stock or the environment. On the basis of thorough risk assessments, conducted largely on a line-by-line basis, Jernbaneverket's top priorities in this focus area are as follows:

- Signalling systems
- Elimination and upgrading of level crossings
- Securing against landslides and line slippage

- Communication systems, lighting, evacuation routes and marking in tunnels
- Radio communication with trains (GSM-R)
- Measures to ensure passenger safety at and in the vicinity of stations

Environmental protection

Jernbaneverket aims to secure rail's position as the most environmentally friendly mode of transport through specific environmental standards concerning railway operations and development that protect the interests of rail users and society. Jernbaneverket's principal environmental objective is to reinforce the environmental benefits of rail transport through proper use of resources, reduced overall environmental impact, and defined, quantifiable environmental standards for our own operations, our suppliers and train companies. Rail's environmental impact can be managed by means of good planning, environmental monitoring of construction projects, and appropriate operating and maintenance procedures.

Capacity enhancements

This focus area covers initiatives designed to increase the capacity of the rail network for freight and passenger traffic alike. To increase rail's competitiveness in the freight market, it is vital to improve the infrastructure to allow for larger and more frequent freight trains that meet the needs of the market. As well as increasing the loading gauge, we also have to provide sufficient passing loops and electricity supply.

Stations and interchanges

One of Jernbaneverket's strategies is to develop user-friendly stations and interchanges with the emphasis on safety, accessibility, information and service. The development of station facilities must form part of a joint product-development process involving train companies, service businesses, highway authorities and planning authorities. The aim is to provide passengers with the standards they expect, and to encourage more people to use public transport.

Table 2: State Accounts for 2004 (NOK million)

Section 1350: Expenditure					
Item	Description	"Blue Book" for 2004	Adjustments	Approved budget	Accounts
23	Operations and maintenance	2 860.3	-1.1	2 859.2	2 930.4
25	Operations and maintenance, airport line	72.3	10.3	82.6	68.1
30	Investment in railway lines	1 867.0	-36.8	1 830.2	1 857.9
Total, section 1350		4 799.6	-27.6	4 772.0	4 856.4

Section 4350: Income					
Item	Description	"Blue Book" for 2004	Adjustments	Approved budget	Accounts
01	Track charges	41.4	0.0	41.4	24.0
02	Sale of equipment, services, etc.	184.3	0.0	184.3	227.3
06	Resale of electricity for train operations	167.8	0.0	167.8	163.1
07	Payment for use of airport line	72.3	22.1	94.4	87.3
15	Reimbursement for employment creation schemes	0.0	0.0	0.0	0.1
16.11	Reimbursement of salaries	0.0	0.0	0.0	4.5
16.12	Reimbursement of employer contributions	0.0	0.0	0.0	0.6
17	Reimbursement for apprentices	0.0	0.0	0.0	1.4
18.11	Reimbursement of sick pay	0.0	0.0	0.0	36.4
18.12	Reimbursement of employer contributions on sick pay	0.0	0.0	0.0	4.9
Total, section 4350		465.8	22.1	487.9	549.8

Our programme involves improving customer facilities at stations, such as access, car parks, platforms and waiting areas, travel information, and other customer services.

State Accounts for 2004

Jernbaneverket's budget allocations for 2004 under section 1350, Expenditure, and section 4350, Income, were NOK 4 772.0m and NOK 487.9m respectively. The budget allocations were based on:

- Letter from the Ministry of Transport and Communications dated 22 December 2003 regarding Jernbaneverket's letter of allocation for 2004
- Letter from the Ministry of Transport and Communications dated 15 March 2004 regarding the carry-forward of unused budget allocations to 2004
- Letter from the Ministry of Transport and Communications dated 6 July 2004 regarding changes following revisions to the 2004 national budget
- Letter from the Ministry of Transport and Communications dated 28 October 2004 regarding the payment of directors' fees at BaneService
- Letter from the Ministry of Transport and Communications dated 11 January 2005 regarding revised budget allocations in the transport and communications sector.

An Airport Express train overtakes a string of road traffic at Lysaker. Photo: Magne Hamar





Human resources

Jernbaneverket's principal objective in the core area of human resources is to be an attractive workplace. This means a good working environment with good opportunities for career development, meaningful duties, and responsible and inspirational colleagues and managers.

Personnel and working environment

Permanent workforce

At the turn of the year 2004, Jernbaneverket had 3 152 permanent employees, 292 fewer than at the previous year-end.

Overtime

Overtime payments in 2004 accounted for 8.0% of permanent salaries, a drop of 1.9 percentage points from the previous year. Overtime payments each month in 2004 were lower than in 2003.

Sick leave

The proportion of working days lost through illness in 2004 was 6.0%, down from 6.8 % in 2003. This was the third consecutive year in which Jernbaneverket has seen a drop in absenteeism, and the trend seems set to continue.

Jernbaneverket has introduced an "inclusive workplace" scheme to focus on managing absenteeism. All managers with personnel responsibilities have received relevant training, and local inclusive-workplace action plans with specific targets have been formulated.

Injuries leading to absence

The number of injuries leading to absence recorded in 2004 was 48, 12 more than in 2003.

Personnel policy

Greater emphasis on personnel policy is a key element in Jernbaneverket's restructuring process. A restructuring agreement has been signed with the trade unions in relation to the introduction of competitive tendering on the operational side.

Equal opportunities

Jernbaneverket has conducted a comparative study of pay rises and promotion in the organisation for women and men in the years 1999–2004. The study showed that women generally enjoyed higher pay rises as a result of promotion and salary reviews than their male colleagues. In 2005, Jernbaneverket will look more closely at categories in which men or women are under-represented and attempt to identify explanations and solutions. Equal opportunities is a key element in Jernbaneverket's pay and personnel policies, and Jernbaneverket will continue its efforts to recruit more female managers.

JBV Ressurs

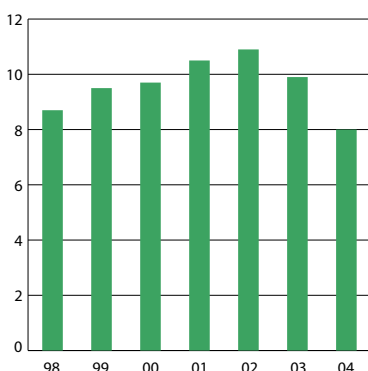
Competitive tendering for Jernbaneverket's production activities

On 7 December 2004, the Norwegian Parliament decided that all Jernbaneverket's production activities apart from signalling and telecommunications would be opened up to competitive tendering between 2005 and 2009. This will necessitate extensive reductions in the workforce on the operational side as production tasks are gradually put out to tender over this period. The redundancies are estimated at 980 full-time equivalent posts (source: Parliamentary Bill No. 1, Supplement No. 2, 2004–05).

Jernbaneverket wishes to ensure the best possible management of human resources in connection with the competitive tendering and workforce reductions necessitated by Parliament's decision. For this reason, Jernbaneverket set up a restructuring unit, JBV Ressurs, in November 2004. JBV Ressurs will have a dual role in relation to the restructuring process:

- Providing advice, support and guidance to the Infrastructure Management throughout the process
- Assuming employer responsibility for redundant employees, actively helping them find new work, and ensuring that individual employees leave Jernbaneverket on a positive note.

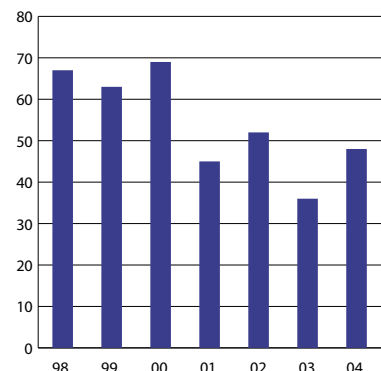
Overtime as % of permanent salaries



Days lost through illness



Number of injuries leading to absence





Laying new track on the Drammen line between Sandvika and Asker. Photo: Øystein Grue

Competitiveness

Jernbaneverket is working to increase rail's market share where rail transport is socioeconomically viable.

Train companies on the national rail network

In 2004, the following train companies held licences to operate on Norway's national rail network:

F = freight

P = passenger services

M = museums and preservation societies

■ CargoNet AS	F
■ Connex Tog AS	P
■ Flytoget AS	P
■ GM-Gruppen	M
■ Green Cargo AB	F
■ Hector Rail AB	F
■ Malmtrafikk AS	F
■ NSB AS	P
■ Ofotbanen AS	F and P
■ Tågakeriet i Bergslagen AB	F
■ Valdresbanen AS	M

In addition to the established train companies, a number of potential freight and passenger operators and owners of private sidings were in contact with Jernbaneverket during the year to obtain information on which to base decisions regarding their future strategy.

Infrastructure capacity – Jernbaneverket's core product

Jernbaneverket's principal offering is infrastructure capacity, i.e. space on the rail network that can be used for running trains. The quantity and quality of the existing capacity determines the network's ability not only to handle current traffic but also to accommodate traffic increases.

Importance of capacity to rail's competitiveness

Along with high infrastructure availability (high uptime on the technical systems), capacity is the most important contribution Jernbaneverket can make to improving the competitiveness of freight and passenger train companies. High fixed costs are characteristic of rail transport. Unit costs will fall if the means of production (locomotives, rolling stock and personnel) can be used more cost-effectively. Train companies do not make money while their trains are idle.

How network capacity is calculated

Capacity is an expression of the number of units of a particular type that can pass through a specific line section over a unit of time. In order to have a clear understanding of the network's capacity and the variable factors that influence this, we make a distinction between two types of capacity:

- Traffic capacity, which is concerned with the number of trains (in this case we only consider the actual train traffic)
- Transport capacity, which is concerned with the quantities in terms of tonnes, cubic metres and passenger seats that can pass through a line section

Traffic capacity varies depending on the following factors:

On single-track lines:

- Longest distance in terms of time between passing loops (most important)
- Multiple approaches to stations (less important)
- Variations in train speeds (less important)
- Variations in distance between passing loops (less important)

On double-track lines:

- Variations in train speeds (most important)
- Fixed or moving block sections (less important)
- Overtaking loops (important on lengthy sections)
- Sidings for moving trains into and out of service

Transport capacity is influenced by a number of variable infrastructure-related factors in addition to the number of trains. These factors, which limit the length, gross weight and profile of trains, are as follows:

- Length of passing loops
- Permitted axleload (often linked to train's permitted speed)
- Power supply (for electric trains)
- Gradients (determine how many tonnes of trailing weight a locomotive can haul while maintaining the prescribed speed)
- Loading gauge (determines maximum wagon height, width and length)

The above deals with the capacity of individual line sections. If this approach is extended to the entire line, we can talk about line capacity or potential transport work expressed as a new set of parameters such as potential tonne-kilometres or seat-kilometres. At this point, a new variable is introduced: train speed.

Capacity of stations, freight terminals, yards and workshops

Capacity for moving trains is just part of the equation. In addition, we have to consider the capacity of facilities where locomotives and rolling stock are stationary for the following reasons:

- Loading/unloading of passengers and goods
- Marshalling
- Parking and positioning
- Maintenance

At such facilities, adequate track lengths are the crucial factor for capacity. The facility must also be designed in such a way that the relevant tasks can be carried out in a timely, cost-effective manner.

Current capacity situation on Norway's railways

As in previous years, there were a number of temporary capacity reductions (speed restrictions, line closures and train cancellations) owing mainly to scheduled infrastructure works. Jernbaneverket makes constant efforts to reduce the extent and duration of these temporary restrictions and to improve track availability.

Oslo central station (Oslo S) and the Skøyen–Asker, Oslo S–Ski and Bergen–Arna sections are already operating at full capacity for long periods in the rush hour. This means we are unable to accommodate the demands of train companies for more train paths.

Capacity is well utilised at certain times of day on most lines in eastern Norway and on local lines around Stavanger and Trondheim. Jernbaneverket is considering whether these sections too should be declared overloaded.¹

Operating parameters

Consequences of competitive tendering

When the old, integrated NSB railway undertaking was split up with effect from 1 December 1996, the Norwegian Parliament decided that various pieces of real estate should remain in the ownership of NSB AS. This move was designed to ensure that the company had sufficient start-up capital without requiring a fresh cash injection.

Many of the properties concerned, including all station buildings, workshops, freight terminals and various rail yards, were essential to railway operations. There were also numerous adjoining sites that could be used for railway purposes but were being used for other purposes at the time of the transfer. So long as NSB AS (and its subsidiaries) was the sole user of the national rail network and adjoining sites, this arrangement was relatively unproblematic. Now that multiple train companies have access to the network, the rail industry regularly faces challenges when new train companies request capacity in or access to areas that are directly or indirectly owned or managed by their main competitor NSB AS or its subsidiaries.

Another challenge is that railway stakeholders – and to some extent Jernbaneverket itself – are evaluating future requirements for additional railway land in the light of current use. This is particularly true of rail yards at or near stations in cities and other areas where

land is at a premium. Following restructuring of freight traffic by CargoNet AS, the requirement for such sites apparently diminished – because there were no other takers when CargoNet AS pulled out. In view of this, plans are being drawn up for alternative uses for these sites – typically, urban redevelopment involving a mix of residential properties and offices. There is the potential for disputes here between local authorities and developers on the one hand and, on the other, new train companies wishing to resume use of the sites for transport purposes.

Loading gauge

The loading gauge for each line indicates the maximum permissible height and width of loaded or unloaded rolling stock on that line. Loading gauge is one of the key capacity parameters for freight traffic.

With a few exceptions, loading gauge UIC P407 now applies to the entire national rail network in Norway. This loading gauge allows higher loads and greater capacity for container traffic and, above all, piggyback transport of semitrailers.

Piggyback traffic, which has shown enormous potential on national and especially international routes, is a growth segment. To a large extent, this involves temperature-controlled consignments with a high goods value, a segment in which rail offers a competitive transport option. What is more, such traffic is largely won over from the roads, through the use of wagons designed for intermodal traffic.

For international traffic, the priority is to

¹ Under the regulations on capacity allocation, declaring a section of line to be overloaded requires Jernbaneverket to complete a capacity analysis of that section within six months. Within a further six months, Jernbaneverket must have produced a capacity enhancement plan.

Foto: Rune Fossum



adapt parts of the network to the international loading gauge RIV-3.2, which allows the use of larger, more modern wagons. In effect, RIV-3.2 is a standard loading gauge for the European rail network north of the Alps. At present, this loading gauge is permitted only on the Kongsvinger line.

“Raising the wires”¹

In 2004, around 2 000 kilometres of the Norwegian rail network were cleared for a new loading gauge that permits a maximum wagon height of 4.6 metres. This loading gauge has been designed to accommodate a fleet of enclosed double-deck car transporters, but a knock-on effect is that the same lines are now also suitable for some types of double-deck passenger train.

Legal parameters of the rail sector

Many of the rail sector’s operating parameters are technical in nature and therefore costly and time-consuming to modify. However, amending legal parameters rarely requires more than the will to do so. Jernbaneverket is constantly seeking to identify parameters that run contrary to the objective of increasing rail’s share of the overall transport market – for instance, regulations that impose burdens on the rail sector that do not apply to other parts of the transport industry. Jernbaneverket works constantly to amend those parameters within its control. Where we do not set the parameters ourselves, we seek to influence those in charge for the benefit of the rail system.

Network Statement

The third edition of Jernbaneverket’s pro-

duct description went to press at the end of 2004. The Network Statement contains information on the type of infrastructure available to companies wishing to run train services on the national network, the terms and conditions of access, charging principles and rates, planned changes to track charges, and the principles and criteria for capacity allocation.

The second edition of the Network Statement, published in mid-December 2003, covers the period from December 2003 to December 2005. The third edition covers the period from December 2005 to December 2006.

The Network Statement is available on Jernbaneverket’s website at www.jernbaneverket.no/marked.

Track access agreement

Jernbaneverket’s standard agreement on access to the national rail infrastructure is available on Jernbaneverket’s website. A track access agreement is signed with all companies licensed to operate train services on the national network.

Norwegian Railway School

Training of drivers and other rail staff

In preparation for the introduction of competition in the rail sector, Jernbaneverket was commissioned by the Ministry of Transport and Communications in December 2003 to oversee the setting up of a new training regime for locomotive drivers. Jernbaneverket’s mandate also covers the establishment of a single training body for the entire rail sector. Despite a tight timescale, the process is on schedule. The first intake of students for driver training

arrived on 17 January 2005, and the official opening of the Norwegian Railway School took place the following day.

The school’s opening is a key element in the creation of a single, integrated centre of excellence for the rail sector. As a neutral, operator-independent body, the school will ensure equal terms and treatment for all players in the sector following the introduction of competition.

The Norwegian Railway School aims to be:

■ The centre of excellence for the rail sector

With its pool of expertise and administrative support, and in association with external partners, the school aims to meet the rail sector’s skills requirements on an ongoing basis, and to develop skills enhancement programmes for the future.

■ The focal point for the rail sector

The school aims to promote interaction between the various professions in the rail sector, to emphasise the importance of shared concepts, to foster understanding of the various fields of work, and to create a shared sense of pride in the sector.

■ Neutral

Helping to ensure competition on equal terms within the rail sector.

“The Norwegian Railway School will be a modern educational establishment using tools such as simulators, intelligent displays, wireless student networks and e-learning systems in combination with effective teaching methods and the all-important practical experience. In short: learning, experience and practice – with the emphasis on practice.”

Harald Storstrøm, School Principal

¹ This loading-gauge modification programme is so called because it has been necessary to raise the catenary in a few locations.

Helge Sæther, train dispatcher, at Jaren station. Photo: Øystein Grue



Key figures for the national rail network

Lines	Route-km	Double track km	Passing loops > 600 m	Bridges	Tunnels	Level-crossings	Stations ¹⁾
■ Nordland line (Trondheim - Bodø)	729	-	24	361	156	882	45
■ Sørland line (Drammen - Stavanger)	545	-	17	495	190	152	46
■ Dovre line (Eidsvoll - Trondheim)	485	-	36	384	42	378	28
■ Røros line (Hamar - Støren)	383	-	7	291	6	509	26
■ Bergen line (Hønefoss - Bergen)	372	-	18	192	155	280	38
■ Østfold line, west	170	63	8	190	16	89	23
■ Vestfold line (Drammen - Skien)	148	23	-	117	16	151	11
■ Gjøvik line (Oslo S - Gjøvik)	124	3	2	102	7	158	30
■ Kongsvinger line	115	-	7	49	-	90	18
■ Rauma line	114	-	1	100	6	244	4
■ Solør line	94	-	-	31	-	232	-
■ Østfold line, east	80	-	1	42	2	115	15
■ Meråker line (Hell - Storlien)	71	-	-	64	1	59	5
■ Main line (Oslo S - Eidsvoll)	68	21	6	62	2	11	21
■ Gardermoen line (Etterstad - Eidsvoll)	64	60	-	37	3	-	3
■ Randsfjord line (Hokksund - Hønefoss)	54	-	-	27	-	101	2
■ Bratsberg line (Skien - Notodden, excl. Nordagutu - Hjuksebø)	44	-	-	57	24	56	4
■ Drammen line (Oslo S - Drammen)	42	42	-	58	11	2	16
■ Ofoten line	42	-	1	6	20	43	6
■ Arendal line	37	-	-	16	3	48	7
■ Roa - Hønefoss line	32	-	-	25	3	46	-
■ Flåm line	20	-	-	2	21	41	9
■ Spikkestad line	14	-	-	12	-	8	7
■ Brevik line (Eidanger - Brevik)	10	-	-	-	1	13	-
■ Alnabru - Loenga	7	-	-	3	-	-	-
■ Stavne - Leangen	6	-	-	2	1	-	1
■ Alnabru - Grefsen	5	-	-	5	-	9	-
■ Skøyen - Filipstad	2	2	-	4	-	-	-
■ Dalane - Suldal	1	-	-	-	-	-	-
Total, lines with regular traffic	3878	214	128	2734	686	3717	365
Branch lines without regular traffic	199	0	0	70	16	532	0
Total	4077	214	128	2804	702	4249	365

■ Electrified lines

■ Non-electrified lines

1 Number of stations with passenger services at 9 January 2005

Lifting a semitrailer onto a rail wagon at Alnabru. Photo: Scanpix



Number of trains/train density



Line priority

The rail network is classified on a scale of five priorities, based primarily on:

- Current use of the network
- Expected traffic growth
- Socioeconomic benefit

Traffic volumes on the national rail network

The train companies have supplied the following data:

Freight traffic

Tonnes transported by rail (1000)

	1997	1998	1999	2000	2001	2002	2003	2004
Norwegian domestic traffic	5 038	5 802	6 024	5 890	6 300	5 894	4 589	6 433
NSB AS	5 038	5 802	6 024	5 890	6 300	.	.	.
CargoNet AS	.	.	.	.	.	5 894	4 589	6 433
Other train companies ¹	.	.	.	.	.	.	.	..
Cross-border traffic *	16 709	15 533	13 599	15 745	14 081	14 534	16 556	16 280
NSB AS	1 538	1 656	2 075	2 069	1 891	.	.	.
CargoNet AS	.	.	.	.	.	1 760	2 826	1 048
Malmtrafikk AS	15 171	13 877	11 524	13 676	12 190	12 774	13 730	15 179
Other train companies ²	.	.	.	.	.	.	.	53
Total	21 747	21 335	19 623	21 635	20 381	20 428	21 145	22 713

Tonne-kilometres (million)

	1997	1998	1999	2000	2001	2002	2003	2004
Norwegian domestic traffic	1949	1934	1817	1775	1933	1686	1559	2013
NSB AS	1949	1934	1 817	1 775	1 933	.	.	.
CargoNet AS	.	.	.	.	.	1 686	1 559	2 013
Other train companies ¹	.	.	.	.	.	.	.	..
Cross-border traffic *	1026	1014	1077	1180	954	1002	1068	787
NSB AS	450	487	639	623	479	.	.	.
CargoNet AS	.	.	.	.	.	504	533	185
Malmtrafikk AS	576	527	438	557	475	498	535	592
Other train companies ²	.	.	.	.	.	.	..	10
Total	2 975	2 948	2 894	2 955	2 887	2 688	2 627	2 800

Passenger traffic

Passenger journeys (1000)

	1997	1998	1999	2000	2001	2002	2003	2004
Norwegian domestic traffic	44 634	48 207	50 289	51 211	49 690	50 102	49 434	51 043
NSB AS ³	44 634	46 856	45 803	46 670	44 988	45 599	44 980	46 345
Flytoget AS ³	.	1 000	4 116	4 166	4 085	3 956	3 903	4 180
Flåm Utvikling AS	.	351	370	375	398	415	417	459
Linx AB	.	.	.	.	219	132	131	59
Other train companies ¹	.	.	.	.	.	.	3	..
Cross-border traffic *	110	116	376	376	519	518	505	312
NSB AS ³	110	116	376	376	295	120	110	62
Linx AB	.	.	.	.	224	398	356	250
Other train companies ¹	.	.	.	.	.	.	39	..
Total	44 744	48 323	50 665	51 587	50 209	50 620	49 939	51 355

Passenger-kilometres (million)

	1997	1998	1999	2000	2001	2002	2003	2004
Norwegian domestic traffic	2514	2602	2674	2649	2538	2479	2414	2617
NSB AS ³	2514	2540	2 446	2 418	2 290	2 240	2 178	2 375
Flytoget AS ³	.	55	221	224	220	213	210	225
Flåm Utvikling AS	.	7	7	7	8	8	8	9
Linx AB	.	.	.	.	20	18	18	8
Other train companies ¹	.	.	.	.	.	.	0	..
Cross-border traffic *	47	50	59	58	56	64	60	40
NSB AS ³	47	50	59	58	35	9	10	6
Linx AB	.	.	.	.	21	55	48	34
Other train companies ¹	.	.	.	.	.	.	2	..
Total	2 561	2 652	2 733	2 707	2 594	2 543	2 474	2 657

*) Total for Norwegian part of route

1) Figures from Ofofbanen AB for 2004 not available

2) Figures from Green Cargo AB and Ofofbanen AS for 2004 not available

3) Figures from NSB and Flytoget are adjusted for previous years

Source: NSB AS and Flytoget AS

Standard symbols in tables	Symbol
Not applicable	.
Figures not available	..
Zero	–
Less than 0,5 of the relevant unit	0

Punctuality

Norwegian railways have never been so good at timekeeping, setting a new record for punctuality in 2004. Jernbaneverket's overall punctuality target is that at least 90% of trains must arrive at their destination on time.

Passenger services

The improved performance seen in 2003 continued in 2004. Passenger services to and from Oslo central station (Oslo S) are very close to meeting their punctuality target.

Almost all Oslo suburban services are now more than 80% on time, with the exception of the Drammen line. The Gjøvik line met its target, as did local services in other parts of Norway apart from the Bratsberg line.

Regional services too made progress, with the Østfold and Gjøvik lines meeting their targets.

Airport Express services maintained their good timekeeping, with 95% on time.

Long-distance services met their punctuality targets on all routes apart from the Røros and Sørland lines.

Freight

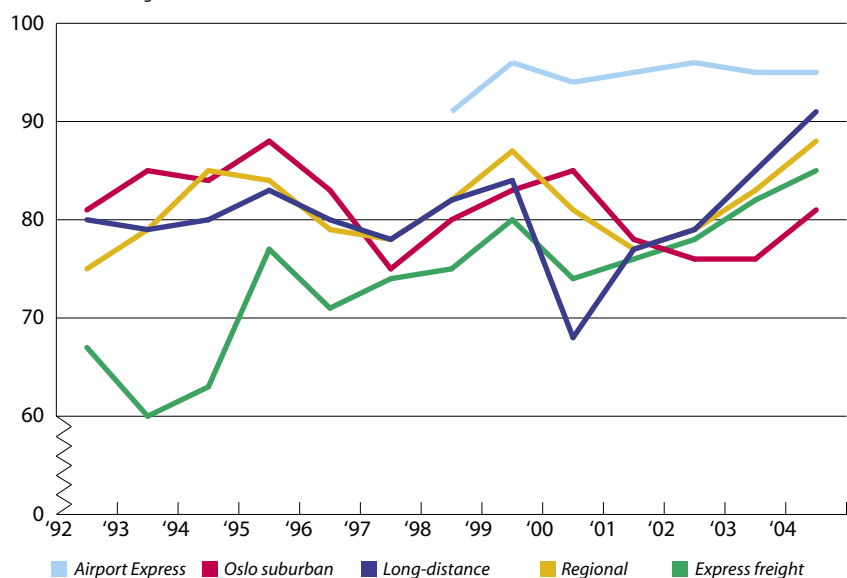
All lines and products saw good improvements in timekeeping, with CargoNet meeting its targets on the Sørland and Nordland lines, and Green Cargo on the Østfold line.

Causes of late running

Timekeeping is poorest on Oslo suburban services, owing to the fact that some sections are overloaded. What is more, major infrastructure works are under way on the Drammen line, which carries trains to and from destinations throughout the east of Norway, as well as the south and west. The Drammen line is therefore the key to better punctuality on Norwegian railways.

Train punctuality 1992–2004

% of trains arriving on time



"On time" is defined as a delay of 0–3 minutes for suburban, regional and Airport Express services, and 0–5 minutes for all other trains.

Large-scale infrastructure works were carried out by closing the section in question to all traffic over one weekend, with passengers being transported by bus. The Drammen line was closed for two weeks in the summer owing to construction work on the new double-track section.

Technical systems (especially interlockings) on some sections suffered from a disproportionate number of faults. This was particularly true in the Oslo area. Faults of this kind adversely affect punctuality, as do rolling-stock faults, which were also prevalent at times. Electric multiple units (EMUs) on the Jæren line experienced power supply problems. NSB's new Class 72 suburban EMUs suffered

from numerous technical failures, leading to a complete breakdown of services at times.

In July 2004, Jernbaneverket switched to a new method of recording delays. Automated electronic recording has resulted in a higher number of incidents recorded, which makes it difficult to draw a good comparison with records produced using the previous manual method.

Punctuality statistics for 2004

Punctuality statistics for 2004 are available online (in Norwegian) at www.jernbaneverket.no under "Om Jernbaneverket".

Avgang Departures

Avgang Departure	Tog til Destination	Spor Track	Forventet Expected	Merknader Remarks
13:15	Eidsvoll	3		NSB Lokaltog - Via Gardermoen - Stopper ved Oslo S før Lillestrøm
13:19	Kongsberg	1		NSB Lokaltog - Stopper ved Skøyen, Lysaker og Sandvika før Aker
13:19	Oslo Lufthavn	4		Flytoget - Ingen avstigning før Oslo Lufthavn
13:25	Drammen	1		NSB Lokaltog - Stopper ved alle stasjoner
13:25	Lillehammer	3		NSB Regiontog - Via Oslo Lufthavn Gardermoen
13:27	Skøyen	2		NSB Lokaltog
13:31	Skøyen	1		NSB Lokaltog
13:31	Ski	3		NSB Lokaltog - Stopper ved alle stasjoner
13:37	Lillestrøm	3		NSB Lokaltog - Stopper ved alle stasjoner
13:39	Oslo Lufthavn	4		Flytoget - Ingen avstigning før Oslo Lufthavn
13:43	Moss	3		NSB Lokaltog - Stopper ved Oslo S og Kolbotn før Ski
13:45	Dal	4		NSB Lokaltog - Via Jessheim - Stopper ved Oslo S før Lillestrøm
13:45	Larvik	1		NSB Regiontog - Forbindelse til Ski. Stopper ved Lysaker før Aker
13:55	Drammen	1		NSB Lokaltog - Stopper ved alle stasjoner
13:57	Mysen	4		NSB Lokaltog - Stopper ved Oslo S og Holmlia før Ski



Train information display at Nationaltheatret station. Photo: Anne Siri Haugen

Environmental protection

Jernbaneverket's objective is to reinforce the environmental benefits of rail transport.

Railways and the environment

The transport sector faces a wide variety of environmental challenges, particularly in the areas of biodiversity, cultural heritage, climate change, air pollution and noise. A commitment to rail and other forms of public transport provides users with an alternative that is less environmentally damaging, and hence helps reduce the adverse environmental impact of the transport sector.

Environmental management

Environmental management forms an integral part of Jernbaneverket's management system. The system is regularly reviewed. At the last review, in 2004, the system was adapted to the new organisational structure, and changes were made to some of the environmental indicators that form part of the reporting standard for the regions. Work on an environmental protection plan for the years 2006–09 got under way in 2004.

Environmentally friendly planning, project management and construction

Activities in 2004 centred on the Sandvika–Asker and GSM-R projects, which have an environmental monitoring programme for the construction phase.

Cultural heritage

Jernbaneverket is working with Riksantikvaren (the Directorate for Cultural Heritage) on a national conservation plan for railway-related cultural heritage. The draft plan was sent out for public consultation in 2004. In 2005, the priority will be to start the process of obtaining protected status for six preser-

ved railways. Management plans for the Rauma, Ofoten and Kongsvinger lines will also be drawn up.

Visual environment

Jernbaneverket is working to improve the environment at stations and the lineside.

Priority tasks in 2004 included providing Jernbaneverket staff with information and training. A seminar was held for members of staff with responsibility for signage. During the year we also ascertained that there was a need for signage and furnishing plans at station level, and that a database of such plans should be set up.

Many of the track managers pursued initiatives to clear up and remove waste material from station and storage areas. In addition, procedures were introduced for recording and reporting untidy stations and sections of line. The checklist of criteria that must be met if a station or section is to be classed as tidy was revised during the year.

Jernbaneverket decided in 2004 to join the Keep Norway Tidy campaign, a national effort to reduce litter in public places.

Waste

A large proportion of the materials removed during upgrading of the rail network are reused elsewhere on the network. Waste separation arrangements are being put in place for construction projects, helping to ensure that much of the waste can be recycled. Disposal costs are also lower for separated waste.

Energy consumption

In 2003, Jernbaneverket commenced a two-year energy conservation project

with the goal of reducing electricity consumption by 8.5% from 2002 levels by 2005. By the end of 2003, Jernbaneverket had already cut energy consumption by 15.3%, equivalent to an annual financial saving of NOK 11m (assuming an energy price of NOK 0.65/KWh). This outcome was achieved by systematic upgrading of systems, refurbishment, and charting Jernbaneverket's electricity consumption. The project is receiving funding from Enova, the national energy conservation agency.

Contaminated land

Jernbaneverket was ordered by the Norwegian Pollution Control Authority (SFT) in 2003 to prepare an action plan for cleaning up creosote contamination at the Råde impregnation plant, and to resume monitoring of water quality. A risk assessment has been completed, and the action plan was submitted to SFT in January 2004. An extensive programme of environmental protection measures at the site is scheduled for 2005.

Jernbaneverket was likewise ordered by SFT in 2004 to clean up creosote contamination at Elverum station. Investigations and sampling took place in autumn 2004 to determine the extent of the necessary measures, which will be implemented in 2005.

On the instructions of SFT, an investigation of contaminated land was carried out in 2004 at Ole Deviks vei near the Alnabru rail yard in Oslo. The investigation concluded that no action was necessary on Jernbaneverket's land.

Vegetation control

Herbicides are used to control lineside vegetation for safety reasons and to reduce collisions with animals. Owing

to new regulations, the substances now used are less effective per application, necessitating more frequent spraying. Jernbaneverket has begun to examine alternative methods and equipment for dealing with problem vegetation in the track ballast or at the lineside. Work to develop more effective spraying equipment continued in 2004. Jernbaneverket also started a project to examine an alternative method of vegetation control where cashmere goats graze on lineside vegetation. Trials are under way on the Flåm line and on the Bergen line at Gol.

Collisions with animals

A total of 1 661 animals were hit by trains in 2004, a slight reduction on the record number of collisions in 2003. Jernbaneverket was involved in a five-year project in the Stor-Elvdal district which concluded at the end of 2004. The findings showed that clearing lineside vegetation and feeding the animals in

side valleys were effective ways of reducing the numbers of moose run over by trains.

Noise, vibrations and structural disturbance

Noise is the main form of environmental pollution suffered by people living and working beside the railway.

Noise abatement measures for the remaining homes where Jernbaneverket had a statutory duty to take action were implemented in 2004, in advance of the deadline of 1 January 2005 for complying with the statutory requirements. By year-end, the measures had been completed at all relevant properties apart from 28 homes along the Bergen line, where they will be completed by summer 2005. The county governor has been notified of this delay.

The Norwegian Parliament has adopted a national target to reduce noise

nuisance by 25% from 1999 to 2010. Calculations by Statistics Norway show a 15% reduction in noise pollution from the railway from 1999 to 2002, owing largely to rail grinding and the introduction of new rolling stock.

New guidelines on land use in areas exposed to noise came into force on 1 January 2005. Jernbaneverket played an active role both in formulating these guidelines and in producing an explanatory guide.

Environmental Report for 2004

Details of Jernbaneverket's environmental policies and the status of environmental programmes can be found in the Environmental Report for 2004, available online (in Norwegian) at www.jernbaneverket.no under "Miljørapport 2004".

Kjosfossen waterfall on the Flåm line. Photo: Øystein Grue



International activities

Moves by the European Union to deregulate the rail sector and improve interoperability continued in 2004.

European cooperation

The European Union's Second Railway Package was finally approved in April 2004. It includes amendments to the directives regarding interoperability on conventional and high-speed lines, full deregulation of the internal freight market, a safety directive, and a regulation setting up the European Railway Agency (ERA, see below). The Ministry of Transport and Communications has begun the process of incorporating the package into Norwegian law.

In March 2004, the European Commission presented four further draft legislative proposals constituting the Third Railway Package. This new package includes proposals for standardising driver training across Europe, full deregulation of international passenger traffic, new rules on passenger rights, and rules on quality standards and compensation in respect of freight traffic. As a member of the European Rail Infrastructure Managers (EIM), Jernbaneverket actively helped the organisation to prepare position papers on the Third Railway Package. In June 2004, Jernbaneverket submitted its formal response to the package to the Ministry of Transport and Communications. The EU's legislative bodies are now considering the Third Railway Package, a process that will continue in 2005.

Along with the other members of EIM, Jernbaneverket worked throughout 2004 to strengthen the organisation's role as a mouthpiece for the independent infrastructure managers. EIM decided to recruit additional staff to its secretariat. In March 2004, EIM staged a successful conference in Brussels, the main topic being the status of deregulation one year on from implementation of the First Railway Package.

Experts from Jernbaneverket are heavily involved in various expert and project working groups within the International Union of Railways (UIC). UIC underwent extensive reform and reorganisation in 2004, and much of Jernbaneverket's contribution centred on this process, which was still ongoing at year-end.

Jernbaneverket is also involved in the expert working groups drafting Technical Specifications for Interoperability (TSIs). Until now, this work has been carried out under the auspices of the European Association for Rail Interoperability (AEIF), but during 2005 it will be transferred to the new European Railway Agency (ERA), which reports to the European Commission.

Through RailNet Europe (RNE) and its "one-stop shop" concept, Europe's rail infrastructure managers, both integrated and independent, work together to coordinate the allocation and utilisation of network capacity for international traffic. The organisation held its first annual general meeting in 2004 and from 2006 is to take over primary responsibility for timetabling from Forum Train Europe (FTE).

In an Act of Parliament passed on 10 December 2004, Norway ratified the protocol amending the Convention concerning International Carriage by Rail (COTIF) drawn up by the Intergovernmental Organisation for International Carriage by Rail (OTIF). The new protocol comes into force in 2005.

Nordic cooperation

The activities of the Nordic Infrastructure Managers (NIM) in 2004 were dominated by the withdrawal of Denmark's rail infrastructure manager, Banedanmark, from the organisation. The three remaining

members continued the process of reforming and streamlining the organisation, which will be completed in early 2005.

The project on deregulation of the Nordic railfreight market, commenced in autumn 2001, continued throughout 2004 and will conclude in 2005.

Together with the other members of NIM and the national roads administrations of the Nordic countries, Jernbaneverket is involved in the Joint Nordic Infrastructure Market project set up by the Nordic Council of Ministers. The aim of this project is to pave the way for greater cooperation and a longer-term approach in the Nordic infrastructure sector for both road and rail. A status report on the project was published in June 2004.



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Saltfjellet. Photo: Njål Svingheim



www.jernbaneverket.no



Published by Jernbaneverket, Oslo, May 2005
500 copies
Project management and layout: Aksent Kommunikasjon AS
English translation: Tom Ellett, Alba Scandinavia Translations
Print: AIT Otta

241 617
Trykksaker

