

# Amsterdam Airport—The Growing Importance of Rail Access

Donald Hatch

## Growth of Air Passenger Transport in the Netherlands

With its favourable location close to the most populous areas of north-west Europe, the Netherlands has always played a major role in European transport and distribution. The Royal Dutch Airlines (KLM) began commercial flying at Amsterdam Airport (Schiphol) 15 km south-west of Amsterdam, well before WWII and Schiphol has remained the Netherlands' dominant airport since then with 97% of total air passenger traffic today. As at other airports, growth of traffic has been extremely rapid over most of the last 50 years, with passenger numbers rising from little more than 1 million in 1960 and nearly 10 million in 1980, to 40 million at present (Table 1). The reasons for this spectacular growth cannot be dealt with in detail here, but are important because we need to understand for planning purposes to what extent growth is likely to continue. The following factors have all played greater or lesser roles: the increase in real disposable incomes and particularly in

leisure time; the introduction of larger and larger aircraft with scale economies reflected in lower real airfares, culminating in the recent phenomenon of the low-cost airline; and growing internationalization both in business and the private sphere. The negative impact of competition from high-speed rail services on certain routes has until now been limited, as far as Schiphol is concerned. The doubling of traffic over the decade 1993–2002 was more the result of growing leisure traffic to charter destinations both inside and outside Europe than of buoyant business travel. Although there are virtually no domestic air passengers in the Netherlands, many Dutch have enough time and income to take three or even more short-break holidays abroad each year. A typical business destination such as Frankfurt showed only 33% growth over the last decade, while traffic to Barcelona quadrupled. London remains Schiphol's primary destination with more than 3 million passengers per annum, while Paris has shown only modest growth to 1 million passengers, probably partly as a consequence of the introduction of faster *Thalys* high-speed rail services between the Netherlands and the French capital; the rail journey time from Amsterdam to Paris fell from more than 6 hours in 1993 to a little over 4 hours by *Thalys* today. Although there was a slight decline in air traffic at Schiphol in 2003 compared to 2002, the prospects for future growth remain strong as described later in this article.

concentrated than normal during the conventional rush hours because of the patterns of shift working at airports and airlines. However, access to Schiphol was almost entirely road based until the 1980s. By the 1970s, the airport had been greatly extended, and had good access from the main Amsterdam–The Hague motorway and indeed from the whole of the growing Dutch motorway network (Fig. 1). The small land area of the Netherlands, and the ease with which passengers in those days could be set down or picked up at the terminal entrance, meant that access by car was the main mode. There was no rail access and the only public transport alternative was the KLM airline shuttle bus to and from Amsterdam and The Hague. However, despite the growing motorway network, road traffic congestion was increasing, and it was soon realized that bringing and fetching passengers generated four 'kiss and fly' car journeys, while driving and parking at the airport generated two park and fly journeys, and using public transport generated none at all. In addition, airport employment was also growing rapidly, reaching more than 50,000 today and generating considerable commuter traffic. Ultimately, provision of parking space for both passengers and employees became a major constraint for the airport authorities.

**Table 1 Growth of Air Passengers at Schiphol Airport Amsterdam**

Year	Passengers (million)	Annual growth rate average (%)
1950	0.3	
1955	0.7	15.0
1960	1.3	14.0
1965	2.4	13.0
1970	5.0	16.0
1975	7.5	8.5
1980	9.4	4.5
1985	11.5	7.5
1990	16.5	6.2
1995	24.9	8.5
2000	39.3	9.6
2003	39.9	0.5
2004 (est.)	41.7	4.5

Source: Schiphol Airport Amsterdam annual reports  
Note: Departures, arrivals and transfer passengers

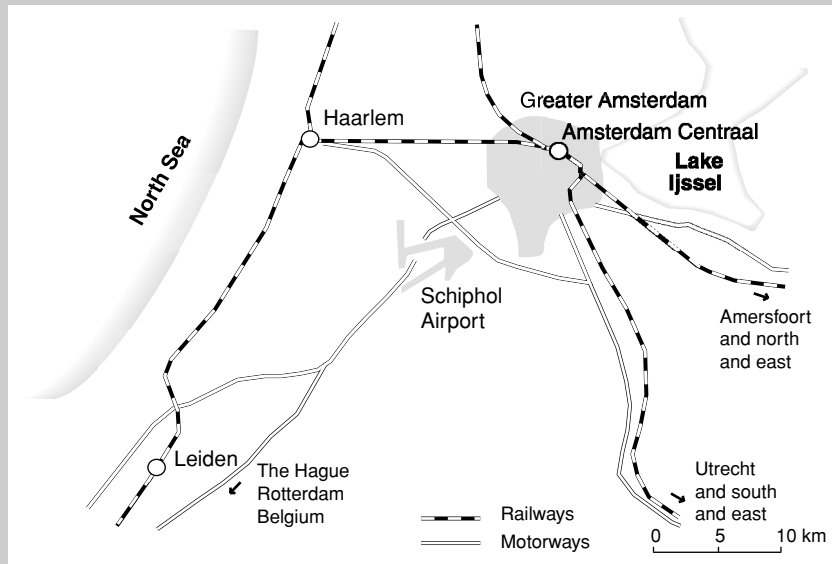
## Growing Problems with Ground Access

Airports are attractive markets for railways, not only because growth in demand seems almost guaranteed, but also because the passenger demand is well spread over the hours of the day and days of the week. Even the commuting traffic is less

## Development of Rail Links to Schiphol (1979–2007)

The Dutch favour the bicycle for journeys up to 3 km, the car for up to 300 km, and flying for longer journeys. For a long time, the norm was a car journey to Schiphol—preferably as a passenger in a friend's or relative's vehicle—for a flight to Paris or London. A railway to serve Schiphol, and a high-speed line (HSL) via Schiphol for journeys to Brussels and beyond, had long been a principal project of the Netherlands Railways (NS) to improve its share of the important 30–500 km market

**Figure 1 Access to Schiphol Airport (1980)**



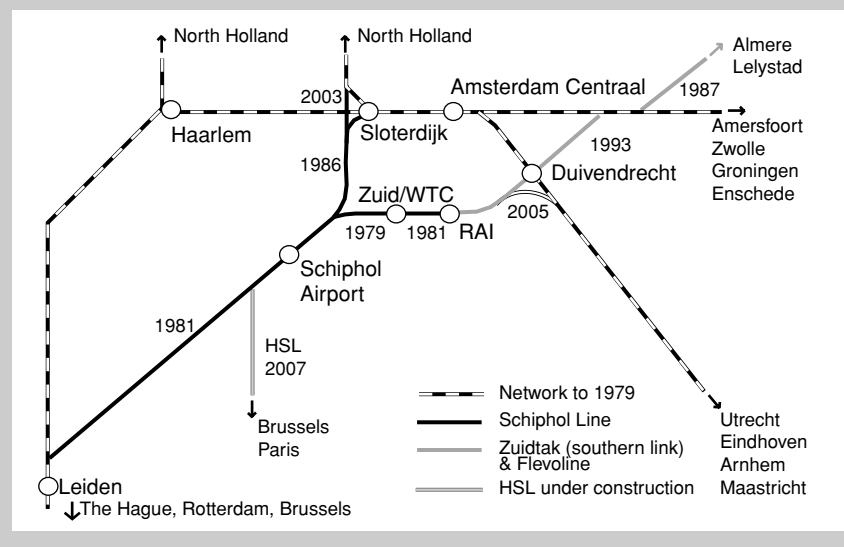
where faster rail has a competitive edge. NS was also anxious to increase rail capacity in the busiest 'Randstad' part of the Netherlands, an area comprised of Amsterdam, The Hague, Rotterdam and Utrecht with a total population of about 6 million (more than 30% of the Dutch population). The old line from Amsterdam to The Hague and Rotterdam was indirect and operating at full capacity, and Amsterdam Centraal Station was becoming less and less central as city development spread south towards the airport. The original plan was to quadruple the tracks from The Hague to Leiden and build a new line from there via a tunnel under Schiphol to a new terminal station in the south of Amsterdam. High costs and local resistance forced the plan for this Amsterdam terminal to be rejected—a wise decision in retrospect, because the inability to run through trains makes a terminal station very inconvenient. Instead, a long-term plan to use a more circuitous but existing alignment around the city was adopted. Figure 2 shows the

development of rail infrastructure at Schiphol and around Amsterdam since the early 1980s. Clearly, the connection to Schiphol was more than just an independent new line to link the airport with its city, as is the case with some recently opened lines such as the

*Heathrow Express* (UK) and *Arlanda Express* (Sweden). From the start, it was designed as an integral part of the NS network, providing services to Schiphol for a large proportion of the population and adding capacity for a wide range of additional Randstad services. This type of development required major long-term investment.

The first step was the 1979 start of a shuttle service to Schiphol from a new station at Amsterdam Zuid/WTC (World Trade Centre), serving a completely new underground station adjacent to the airport terminal. However, the 6-minute journey at a 20-minute frequency attracted few passengers because the line was still isolated from the rest of the network. The first major growth in traffic came when the line was extended in 1981 (becoming the Schiphol Line) offering services from The Hague (33 minutes) and Rotterdam (51 minutes with a stopping service). There were no intercity (IC) services until the Westtak (Western connection) was opened in 1986 to offer frequent through IC services from Amsterdam Centraal (16 minutes), The Hague (27 minutes), and Rotterdam

**Figure 2 Development of Rail Infrastructure to Schiphol (1979–2007)**



(45 minutes), plus an hourly service from Antwerp and Brussels. An hourly all-night service linking Schiphol with the four main Randstad cities was opened at the same time and proved very popular with airport and airline employees.

The connection around the south of Amsterdam (Zuidtak) was completed in 1993, allowing through services to Schiphol from Hilversum and Amersfoort in the east and to the new polder cities of Almere and Lelystad. A new station was opened at Duivendrecht, allowing interchange for passengers from Utrecht and the south and east of the country and saving considerable time compared to travelling via Amsterdam. The IC service to Schiphol from the north and east (Groningen, Leeuwarden and Enschede) continued to run via Amsterdam Centraal until 1996 when through IC services to Schiphol via the southern link were introduced, saving 25 minutes. The *Thalys* high-speed service from Amsterdam via Brussels to Paris was introduced in 1996. It runs via Schiphol on the conventional line to Brussels (2 hours and 22 minutes) and on to Paris (4 hours and 30 minutes then, but now 3 hours and 52 minutes after the opening of the HSL section south of Brussels).

Emphasis on providing direct links to the airport by trains from as many cities in the Netherlands as possible continued

with the opening (December 2003) of a rail connection at Sloterdijk, allowing through services from the heavily populated North Holland area. 2006 will see further improvements when four trains an hour via Utrecht (from Eindhoven and Arnhem, respectively) are planned to serve Schiphol using a new connection at Duivendrecht. Utrecht then will be about 30 minutes from the airport, instead of the current 36 minutes with a change. This will be the first regular direct IC service from Utrecht to Schiphol, although there has been a stopping service via Hilversum since 1993. The planned 2007 opening of the HSL, which diverges from the existing line south of Schiphol, to Rotterdam and Antwerp will considerably shorten journey times to Schiphol from Rotterdam, Belgium and Paris (see HSL section).

---

### Market Growth and Rail Market Share

---

As far as growth is concerned, Schiphol is now Europe's fourth largest airport (after London Heathrow, Paris Charles de Gaulle and Frankfurt). With its relatively large proportion of transfer passengers (about 40%), the aim of becoming a European hub has been very successfully achieved. However, KLM and its partner airlines still account for nearly 50% of all aircraft movements. 2003 saw 40 million

air passengers at Schiphol of which 24 million were passengers travelling to and from the airport. Furthermore, there were about 25 million commuting journeys to and from the airport, generating about 8 million rail journeys in addition to a similar number of air passengers using rail for access. Despite various proposals to build a second airport either on reclaimed polder land or even in the North Sea, such plans have effectively been abandoned in favour of further concentrated growth at Schiphol; the logistics of providing (rail) access were a significant factor in this decision. In 2003, a fifth runway was opened, albeit several kilometers from the terminal building. Long-term proposals for additional rail access to a second terminal at Schiphol are discussed later. What are the 'key factors for success' in improving rail's market share for access to airports? Conventional wisdom is that the choice of rail or road is made principally on the basis of convenience and reliability, and that price is a less important factor.

Convenience covers aspects like the journey to the station of origin and the provision of a direct rail link to the airport (or at least one with an easy change), because most journeys involve carrying luggage, especially in the fast-growing leisure segment. Rail–air through ticketing and luggage check-in are elements of the



Artist's impression of NS Intercity rolling stock

(NS)



Double-deck train serving Schiphol Airport Station

(NS)

marketing strategy here. The convenience for carrying luggage is obviously a major factor in favour of the car, but fears of missed flights due to traffic congestion and the expense and difficulty of parking are negative elements.

Reliability covers the risk of a major delay that might mean missing a flight, either from traffic congestion or train delays. Since passengers must usually check-in well before the flight departure time and fewer than 0.5% of rail passengers experience delays of more than 30 minutes (less than 0.1% of rail passengers are delayed by more than 1 hour), reliability may not seem a significant factor. In 2003, NS received only about 500 complaints and 5000 compensation claims for delays (of 30 minutes or more) on train journeys to Schiphol; this is less than 1 journey in 1000 given the total of about 8 million journeys to the airport. (NS refunds 50% of the ticket price for delays of 30–60 minutes at destinations and 100% for delays of more than 60 minutes). However, personal security on trains is a growing concern and increased policing is being implemented to prevent thefts from vulnerable foreign visitors, especially on the Amsterdam–Schiphol section.

Recent qualitative market research conducted by the Centre for Marketing Analyses jointly commissioned by NS and Schiphol Group (airport operator) surveyed the reasons that actually determine modal choice. Both business and leisure air passengers were covered by group discussions and interviews. As with most modal choices, the findings confirmed that habit and prejudice are the main factors behind the reasons to stay with the chosen mode. It is normal human behaviour to justify one's behaviour by praising the strengths and ignoring the weaknesses of one's choice, and doing the opposite with alternatives. Consequently, both business and leisure car users cited convenience, security, independence and privacy as

strengths, and the journey to the station, problems with luggage and changes, lack of comfort and information, etc., as weaknesses of the train. Conversely, rail users praised the train's convenience in reaching the heart of the airport, especially when frequent direct services are offered, and gave the risk of traffic congestion, and the cost of parking at the airport as weaknesses of the car. In both cases, there appears to be little willingness to consider another mode, let alone change to it. Some suggestions made to improve the rail mode were: upgrades to first class; better information about delays; combi-tickets for taxi and train; and better parking at departure stations. The aspects of better luggage facilities, rail–air combi-ticketing, and a ticket guarantee in case of delays, are areas NS, KLM and Schiphol Group have developed as possible 'product-plusses' and some experiences are discussed more fully below; it is thought that implementing the other suggestions would have only a marginal effect on the modal split, while being difficult and costly in practice.

Assuming the hurdle of the journey to the departure train station can be solved by the use of car or 'train-taxi' (a form of shared taxi operated at many stations by NS), how far has NS been successful in offering what the survey highlighted as rail's greatest strength, the provision of frequent direct train services to Schiphol? At present, all the busiest 30 stations (with more than 7500 passengers boarding per day, 54% of total rail traffic) have direct services to Schiphol with the exception of Eindhoven, Arnhem, Den Bosch, Haarlem, Nijmegen, Tilburg, Alkmaar, Gouda, Amsterdam Amstel, Maastricht and Ede-Wageningen. Current plans envisage direct services from Eindhoven, Arnhem, Den Bosch, and Ede when the connection at Duivendrecht is opened at the end of 2005. Passengers from virtually all other stations can reach Schiphol with one change of train. It is worth

mentioning that regular and frequent services are the best known and most used; past experiments running occasional supplementary trains through to Schiphol from Maastricht, Eindhoven and Utrecht, or from places in Germany, attracted relatively few customers and were withdrawn to free track capacity for other services.

Car parking away from the terminal building is now mandatory and increasingly expensive (€22.50 (€1 = US\$1.24) per day for short-term parking or €45 for 3 days plus €5 per extra day for long-term parking). Long-term parking involves an inconvenient 10-minute bus ride to and from open-air car parks. At €65, just 1 week of car parking is much more expensive than two return tickets from Utrecht to Schiphol (€24, or only €14 for railcard holders).

Despite the resistance to changing mode mentioned above, this attention to providing frequent direct services to the airport has paid off in rail growth, both in terms of absolute numbers of passengers and in modal split. Schiphol Station has become the Netherlands' sixth busiest railway station with about 50,000 passengers per day (after Amsterdam 150,000; Utrecht 130,000; The Hague 110,000; Rotterdam 92,000; and Leiden 54,000). The more than 2 million annual trips in each direction between Amsterdam and Schiphol make it the most common journey on the NS network.

The totals in Table 2 include passengers commuting to and from the airport, but a simple comparison with the number of air passengers in Table 1 shows that rail's share increased rapidly until about 1990 and has remained steady since then. In fact, market share—or the modal split for rail—has grown from about 10% when the Schiphol Line was opened to 25% in the early 1990s and to nearly 35% today. Table 3 shows the changes in the shares of the various modes over the last decade

**Table 2 Growth in Rail Passengers using Schiphol Station**

	New service/event (first full year)	No. of passengers (million)
1980	Amsterdam RAI–Schiphol shuttle service open	0.5
1982	Den Haag–Schiphol open	1.9
1987	Amsterdam Centraal–Schiphol via western link open	3.9
1991	Student free rail pass introduced	8.2
1994	Southern link and Duivendrecht interchange open	9.8
1996/97	Direct ICs to north and east; <i>Thalys</i> HST to Paris	12.1
2002		16.1

Source: NS

**Table 3 Changes in Modal Split for Journeys to and from Schiphol**

Access mode (%)	1994 total	2002 total	Business Dutch	Business non-Dutch	Leisure Dutch	Leisure non-Dutch
Kiss and fly <sup>1)</sup>	41	33	27	18	48	22
Park and fly	13	10	27	1	11	1
<b>Train</b>	<b>25</b>	<b>33</b>	<b>33</b>	<b>34</b>	<b>28</b>	<b>46</b>
Bus	1	1	1	0	2	1
Taxi	10	10	9	30	6	17
Shared vehicles <sup>2)</sup>	5	10	3	7	6	9
<b>Other including hire car</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>4</b>
Total	100	100	100	100	100	100
No. of air trips (millions)		23.6	3.8	4.4	10.2	5.2

Source: Schiphol Airport Amsterdam

1) Passengers driven to airport by friends or relatives

2) Airline/hotel buses, charters, taxi-buses (discrepancies between total and segments due to non-response)

and gives a breakdown by motive and domicile of the air passenger. Although rail has a strong share both for residents of the Netherlands and for foreigners, as well as for both business and leisure motives, the main competition is still the popular ‘kiss and fly’ use of the private car.

In 2002, slightly more than 16 million people used Schiphol Station; about half were air passengers with the remainder being mainly Schiphol workers going to and from the airport and representing about a one-third modal split for rail for commuting to Schiphol. A large number of airport commuters use the extensive and successful Star Network of bus routes run by the bus operator, Connexion, serving the airport.

Given the importance of the foreign-passenger market (41% of all arriving and departing air travellers in 2002 were non-

Dutch), attention to the specific needs of this group in marketing the rail product is essential. In addition to the obvious need to provide information, signs, etc., at least in Dutch and English, foreign passengers will have little knowledge about possible types of onward transport, where to buy tickets, fares, etc., explaining why visitors predominantly use easy-to-ride but very expensive taxis. (A taxi journey to central Amsterdam from Schiphol costs about €30 compared to about €3 for a rail ticket.) Active marketing of the rail mode before and upon arrival at the airport is needed, since the station although adjacent to the terminal is underground and therefore less prominent. Announcements and written information on-board arriving aircraft and in the arrival halls can all contribute. The NS ticket-vending machines in the airport luggage reclaim areas are mainly used by Dutch

residents because the machines are difficult for newcomers to understand and do not accept banknotes. Although there is a 24-hour manned station ticket office selling the whole range of domestic and international tickets and providing full information (Fig. 3), it is not in the airport terminal building, and therefore not obvious to arriving foreign passengers.

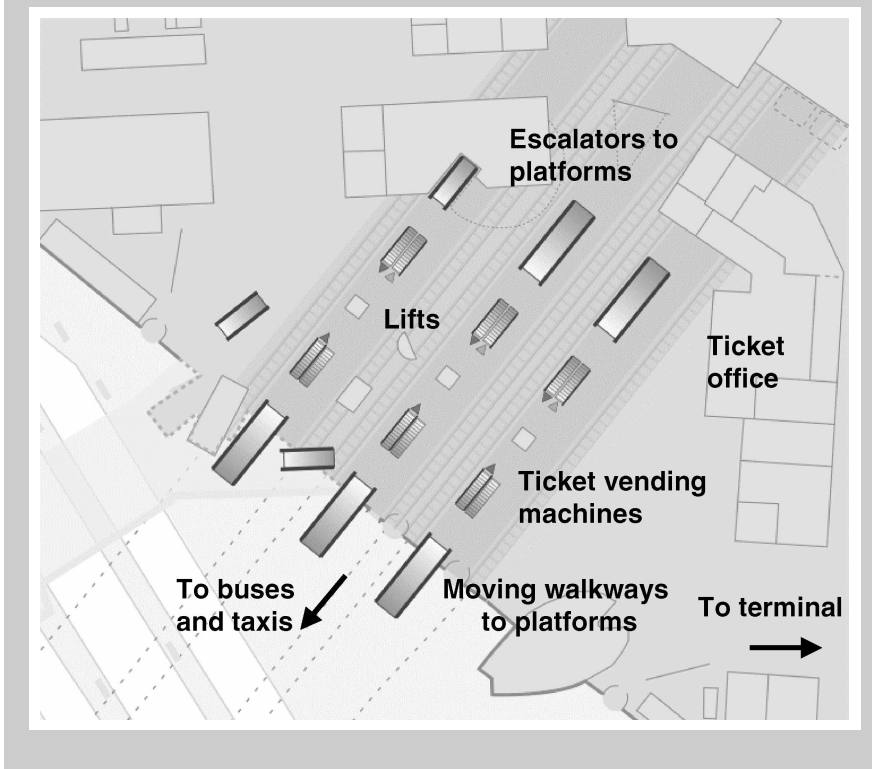
### Luggage and Ticketing Initiatives

Apart from frequent and reliable through rail services to the airport, two other marketing initiatives designed to attract passengers to use the train are provision of a luggage check-in and handling service, and integration of the rail ticket with the airline ticket. Both are tailor-made services that are rather labour intensive and not easily managed by companies used to dealing with mass transport. Although the NS experience to date has been somewhat disappointing, renewed attempts are being made to revitalize what is in essence an important product-plus. The following extracts are from a recent (May 2002) IATA study on rail–air intermodality and serve to highlight this issue:

‘The first obstacle is the lack of luggage check-in for all the journey and security reasons.’ (Air France)

‘Passengers prefer some assistance at the airport station to carry their luggage. A better service to help the passenger transferring his luggage between the air and rail terminals is a first good solution. The problem of security is especially relevant in the case of luggage. Railways do not have the airline facilities to take care of luggage, and would face constant security issues if they did. Moreover, few passengers have used (such a) service—business passengers are not interested, as they carry little luggage, and leisure passengers fear of loss of luggage, not knowing who would have the

Figure 3 Schiphol Station Concourse



responsibility for their luggage.’ (SNCF) ‘Luggage is one of the most eminent factors concerning convenience during rail travel. Offering luggage services will increase demand for intermodality. In an ideal state of service the passenger would ship his luggage to the final destination address before starting the trip to the airport.’ (Düsseldorf Airport)

Attempts by NS to provide an attractive luggage check-in service have had a chequered history. In the late 1980s, NS, KLM and Schiphol Group cooperated in providing check-in desks at the Rotterdam and Den Haag stations. Passengers could have their luggage checked-in and security sealed by trained NS staff, but they still had to carry it themselves onto the train, and hand it in at a special counter at the airport. However, the costs were high and only a few passengers made use of the service, so it was

discontinued after a trial period. In 1995, the same three bodies cooperated in running a train service from Enschede in the east of Holland direct to Schiphol. Customers had a reserved first-class seat, a stewardess travelled on the train and weighed the luggage, which was then checked-in by airport staff on arrival at Schiphol. Boarding passes were issued on the train, reducing the check-in time to 45 minutes. The service was offered at the standard first-class train fare with a 6% supplement, but was expensive to run, somewhat inflexible, not available on all trains, and did not attract many passengers. It has since been discontinued. During 2003, NS started looking again at ways of handling rail passengers’ luggage in cooperation with the TPG Post, the Dutch postal service. Research indicates that inconvenience and fear of loss or delay are major factors

detering use of any luggage system that involves separate collection and delivery of luggage to the airport, but avoiding these deterrents by carrying one’s own luggage is itself a major factor in deterring use of the train. On average, air passengers have just one item of luggage to check-in with just 20% carrying two or more items. Any system is likely to be labour intensive and introduction of a new service is only at the test phase. Perhaps a simple and low-cost improvement would be to extend the availability of luggage trolleys to other major stations as well as Schiphol, and accept that passengers who are not self-sufficient in dealing with their own luggage will tend to choose other modes, such as car or taxi. The demand for through ticketing, meaning one ticket for both the rail and air parts of the journey, is more an issue of offering a product-plus than eliminating a real deterrent to the use of rail. In 2000, NS negotiated an arrangement with KLM such that a business ticket on a KLM flight was valid for a first-class rail journey from and to any station in the Netherlands; an economy airline ticket offered the same facility but in second class. This gave KLM a marketing edge in price-sensitive markets but the arrangement was discontinued in June 2003. Although the fixed price per ticket paid by KLM covered the abstraction of revenue for NS and led to some growth in traffic, KLM found that the product-plus offered by the arrangement did not attract sufficient extra passengers from competitor airlines to compensate for the costs. Rail’s poor reliability image—especially in 2001—was a contributing factor despite the small actual risk of a major rail delay leading to a missed flight. NS and Schiphol Group have recently explored whether all air passengers can be offered free rail travel to and from the airport combined with some form of reliability guarantee. Although such an arrangement would attract passengers from road to rail and



Departing KLM jumbo jet at Schiphol Airport

(D. Hill)

contribute to reduced road congestion to the airport, the costs for the airport are larger than the available budget and early introduction is unlikely.

### **Dealing with Continued Passenger Growth at Schiphol**

Despite economic recession, threats of terrorism, and the recent substitution of some short-haul traffic by improved Intercity Express (ICE) rail services to Germany, Schiphol seems almost certain of continued growth in passenger numbers. Current forecasts are for at least 67 million passengers in 2015, 60% more than today and an annual growth of 4.5%. This forecast takes account of additional substitution of short-haul passengers, principally to Paris, and to a lesser extent Brussels and London, by high-speed train services from 2007, as well as positive effects of growing leisure demand and the impact of low-cost airlines. There are two other Schiphol-specific developments: the proposed privatization of the airport, and the merger between KLM and Air France announced in autumn 2003. The former is not expected to have a significant effect on traffic volumes or the modal split, but the effects of the latter are still uncertain while the ramifications of the

deal are worked out. The airport does not expect a major effect on traffic flows in the first few years after the merger given the guarantee that Air France must maintain KLM as an independent carrier and retain its most important destinations. The two airlines have strongly complementary networks and rationalization of sales and service rather than of routes is expected.

Apart from the major investment required at the airport itself to cope with such growth, dealing with demand for access to the airport will require both a coordinated transport policy and heavy investment in infrastructure to further increase the coverage, frequency and quality of train services, as well as effective marketing to encourage passengers to switch to rail and/or other public transport for journeys to the airport.

Since there are no plans for any substantial increase in road capacity on the already heavily congested motorways serving the airport, or for increasing the number of airport parking spaces, the transport policy remains focused on increasing the market share of public transport, especially rail. Plans to introduce some form of road pricing in the Netherlands have recently returned to the government's agenda, and London's experience with congestion

charging is being closely followed. However, this is a complex area with considerable public resistance. Although road pricing is an inevitable long-term solution to unrestrained car usage, it is unlikely to have any effect on the modal split to Schiphol before 2010 at the earliest. The current situation is that some 30% of departing air passengers are still brought to the airport by car and a further 10% park there. Rail's market share in the early days of the rail link was around 10%, but has grown gradually to about 35% today. Longer-term plans call for at least a 50% market share. Given the current forecasts for passenger growth at Schiphol, this means that NS already needs to plan to double the number of trains serving Schiphol from 14 to 27 per hour in each direction by 2007. This includes incorporating six fast paths for the *Thalys* and domestic high-speed trains to operate on the new HSL, four using the new connection at Duivendrecht (Fig. 2), and one ICE path from Frankfurt and Köln without sacrificing existing services and offering a higher level of punctuality than now. Exactly how this can be done without massive investment in additional infrastructure is currently the subject of a major project to redesign the NS timetable in that year. (The route is already quadruple-tracked through Schiphol with six tracks in the station tunnel.) Much work has been done on a new approach called 'Building and Utilizing,' which aims to increase the capacity of the entire existing Dutch network by making relatively small investments in track layout, energy supply and signalling without extensive track quadrupling. The route through Schiphol is a good testing ground for this approach. The required increase in capacity seems possible with a €75-million investment in more flexible signalling and points, etc., albeit with small increases in running times. Coping with traffic growth after 2010 will require major new investment; present proposals



are for a second terminal to the north-west of the current one with additional parallel rail tracks to serve it diverging from and rejoining the existing line, and running alongside an extension of the Amsterdam metro. Some form of 'people-mover' would be required to connect the two terminals, which might be several kilometers apart. In addition, there are plans to extend the north-south line of the Amsterdam metro to the existing terminal.

---

## HSL

---

When the Dutch HSL was in the planning phase, KLM's PR department reacted by saying,

'We are not afraid of competition from the high-speed train. On the contrary, KLM fully supports the high-speed line. The high-speed train will free up some short-haul paths for intercontinental flights.'

Indeed, NS and KLM formed an alliance to successfully bid for the operation of services on this line from 2007. The plans for a high-speed line from Amsterdam via Rotterdam to Antwerp and Brussels, linking with the high-speed network from Paris and London, date from the 1980s. The line was routed via the new Schiphol Line because a new line into Amsterdam was not thought feasible, and use of the current infrastructure to give access to both Amsterdam Centraal and Amsterdam Zuid/WTC was the only real option. Some intercontinental passengers are expected to transfer to the HSL for onward journeys from Schiphol to Brussels, Paris, etc., but the majority of substitution from air to HSL will be passengers boarding for Brussels, Paris and London in the major cities of Amsterdam, The Hague and Rotterdam, or changing from other domestic trains onto the high-speed services at those stations. In fact, the HSL will carry more domestic passengers than international, and access to Schiphol, principally from Rotterdam (six high-speed trains per hour with two

originating in Breda, near the Belgian border), will be improved when the domestic high-speed trains start to operate. Breda (not currently served by direct trains to Schiphol) will have a journey time of only 47 minutes compared to 90 today. The journey from Rotterdam to Schiphol will be halved to 20 minutes, but there will be no improvement in the 15-minute journey from Amsterdam Centraal. It is not yet known whether access to these high-speed trains will be limited by reservation or subject to market pricing or yield-management system, and whether or how the smart-card ticketing currently under development will apply to these trains. The successful NS/KLM tender for operating the line foresees a considerable payment to the government in track-access charges, so that additional revenue will be required. Eventually, one may expect domestic high-speed services giving faster access to and from Schiphol to be extended via conventional tracks to Eindhoven and other important cities, as proposed in NS's original 1999 submission (rejected by the government at that time). The very desirable through service to London with its very large leisure and business markets remains a long-term objective, but various constraints (principally security related to the Channel Tunnel and immigration) unfortunately mean that early introduction is unlikely. Instead, an inconvenient change at Brussels will still be needed, a factor that has a major negative effect on the attractiveness of the international rail product.

When the HSLs in the Netherlands and UK are completed, journey times from

Schiphol to Brussels, Paris, and London will be 1 hour and 18 minutes, 2 hours and 48 minutes, and 3 hours and 28 minutes (assuming a through service), respectively.

---

## Conclusions

---

Rail traffic to and from Schiphol Airport Amsterdam is likely to continue to grow strongly as a consequence of both the growth in air travel and of further increases in rail's market share. Despite the heavy investment required to cope with such growth, the traffic is profitable for the railways since it is less peaked in time and place than most major flows. With the completion of the HSL, the additional connection at Duivendrecht, and the doubling of train frequencies from 2007, Schiphol looks set to become the Netherlands' fifth most important station, after the four main Dutch cities. With frequent and reliable through train services, and adequate marketing, rail can play an important and growing role in providing access to a major European airport, thereby reducing the costs and environmental impact of ever-increasing investment in road access. ■



### Donald Hatch

Mr Hatch is an Account Manager in the Business Strategy Department of NS, where he is responsible for the performance contract between the railway and the Dutch government for services on the trunk rail network, for international benchmarking, and also for the cooperation between NS and JR Kyushu. Before joining NS in 1984, he worked in marketing at London Transport and as a marketing consultant with McKinsey in Amsterdam. He has a degree in economics from the University of Cambridge. He contributed an article about Dutch-Japanese railway cooperation to *JRTR* 24.