

Innovation with Manchester to Paris night trains using existing rail resources:

Outline Business Case

City Centre Stations	Local times	
Manchester Piccadilly	23:59	
Lille Europe	07:30	→
Brussels Midi-Zuid		08:04
Paris Gare du Nord	08:33	
Paris Gare du Nord	18:28	
Brussels Midi-Zuid		18:56
Lille Europe	19:29	←
Manchester Piccadilly	22:58	



Eurostar 3309/10 at Manchester Piccadilly, January 1998

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Tony Baldwinson

COVER PHOTOGRAPH: "North of London" Eurostar set 3309/10 at Manchester Piccadilly, on a test run to Paris in January 1998.

Source: <http://www.johndarm.clara.net/GBphotos98.html>

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Introduction

This business plan started as an idea in 2007 on two sides of paper just as a leaflet. Everyone who saw it seemed to say, ‘good idea but the problem you have here is...’ So each problem had to be investigated and dealt with convincingly. Five years on, the business plan has probably reached the limits of what an outline plan should cover. It has always been a *pro bono* proposal, in the public domain for any interested organisation to explore and maybe even run with.

From a lay person’s perspective, new projects in the rail industry to my mind resemble a large safe with twelve tumbler dials - the door will only open if you get every combination exactly right, and ‘almost’ does not work. And each tumbler is controlled by someone different. However, most people who have had some input here have shared their knowledge generously as well as frankly. Comments are deliberately unattributed, and I thank all the contributors again here. Any mistakes are my own.

Since 2007 the enthusiasm in the UK rail industry for the *open access* delivery model, instead of franchised delivery, has reduced somewhat. Partly I guess this is because some smaller companies felt crowded out by bigger players, and partly because the franchise model is seen as a much stronger source of earnings.

Ultimately this proposed night train service between Manchester and Paris will probably require a company to take a two-year pilot run on it making a positive return, maybe then to sell it as a proven and going concern to a larger consortium. I wish any such enterprise every success.

TB, October 2012

OUTLINE BUSINESS CASE

This is an outline of the business case for an overnight train service between Manchester and Paris using *existing* stock, routes and speeds. The benefits to passengers would be –

- to arrive in the centre of Paris or Brussels by 9am local time
- to be able to stay in each city region until after 6pm local time
- to save money by avoiding hotel costs, and
- to have a greener travel option to short-haul air.

Passengers respond to benefits. The upgraded 125mph West Coast Main Line has made journey times from Manchester to London more attractive, where half of the passengers who previously travelled by air between Manchester and London have switched to rail. Similar benefits are now possible internationally for short-haul journeys, and as shown by the strong patronage of 180mph high speed rail services such as London – Paris / Brussels and similar Continental networks.

It is as quick to travel by train from London to Brussels (2h01m) as it is to go from London to Manchester (2h07m). This will remain the case in the short to medium term because of the time it will take to build the much-needed high speed rail link between Manchester and London and beyond with the HS2 project not due to be operational until during the 2020s. If phased, HS2 will initially allow high speed rail journeys south of Birmingham and using the ‘classic’ rail network for onward journeys to Manchester etc.

To maintain pace, this proposal for an international night train –

- can be implemented in months,
- assists in Manchester’s international profile,
- helps promote Manchester’s green agenda, and

- complements the strength at Manchester International Airport in longer-haul journeys.

Minimising Risk

Following a growing trend in rail projects, this proposal is only based on existing technologies and capacities, which reduces the project's uncertainties and risk.

Using existing rail technology and stock

This service could make use of *existing train stock, stations and routes*. Manchester Piccadilly platform 1 is 242m which will fit a half-set Eurostar train or a Hitachi Javelin train. The much-needed refurbishment of Manchester Victoria could provide more station capacity as an option for consideration. The seven regional Eurostar trains originally cost £180 million, and although built specifically for use in the UK, Channel Tunnel and French rail networks, they are currently used by SNCF on the Lille – Paris route and as spares. The preferred option is to extend the daytime use of just one of these regional train sets with this overnight service. Two other options are to use a UK Javelin train which is used in South East England during the day, and this will require permission for this type of train the use the Channel Tunnel, and from the French national rail safety authority EPSF to operate in France, or to use an unused half-set Regional Eurostar train reportedly stored in UK rail sidings (see Technical Notes 17, 41 and 50).

There is track capacity. Network Rail's draft Rail Utilisation Strategy to the mid 2030s for the Channel Tunnel has low traffic projections and spare capacity. Increased single-line overnight repair working now on the West Coast Main Line means that there can be fewer night-time diversions due to total closures of a section of track during the week. An adjusted timetable may be required for Saturday / Sunday and for Sunday / Monday journeys where block closures still occur for safety reasons.

The number of passenger trainsets potentially available for use through the Channel Tunnel is set to increase from 2011. The Javelin train (Hitachi built, 395-type, six cars, 200m) does run on *both* HS1

and UK classic rail but is not yet approved to run through the Channel Tunnel. (see Technical Note 47 for further details on internationally approved trains).

There are also Class 92 locomotives which were “specially designed to pull freight trains in the UK and the Channel Tunnel. 46 such locomotives were produced. These locomotives were also designed to pull long-distance night trains between the North of Britain and Paris or Brussels ... which were never commissioned.” (source: Report of the Joint Economic Committee, InterGovernmental Commission, 5 October 2011, page 12). It is understood that the commercial aim is currently to fully utilise the Class 92 locomotives in pulling as many freight trains as possible.

Using existing service models

There have been successful *overnight passenger services* for some years now between London and Alpine ski resorts in southern France in the winter months. For Manchester, being an overnight service deals with the lack of a very-high speed connection to London and deals with the issues of daytime congestion around the Channel Tunnel and on the West Coast Main Line, especially south of Rugby.

The majority of weekend passengers will probably be for leisure with some demand for premium services. By contrast, the in-week service has the prospect to add value in the business market by giving up to nine hours for a working day, all based on using just one train set.

Through a connecting change at the Lille Europe station, there would be scope to include a Manchester – Brussels weekday service to allow for a comfortable arrival for 10:00 meetings in Brussels (09:00 UK time) which are very difficult to reach by same-day flights and require a hotel overnight stay currently, whether the journey from Manchester is by air or by train. An early morning arrival at Lille Europe would connect to the existing 07:30 high-speed weekday service to Brussels Midi arriving at 08:04. The earliest arrival in Brussels Midi from London is currently 10:07 (departs 06:50), whereas the first arrival in London Mon-Weds from Brussels Midi is 07:57 (departs 06:56).

Travel would be in pre-booked reclining seats in dimmed, quiet and staff-monitored carriages. Bright table-seated buffet carriages would be open all night for passengers to eat, talk or work, including wireless internet. Breakfast would be at-seat. If carriage layouts were to be purpose-built then the design could include call buttons as well as reading lights and charging sockets, with an ‘airline style’ seating layout without facing seats for more privacy. First class could include around-seat curtains.

Optional stops

Using the preferred route, there are the options of considering serving the additional UK stations of Birmingham International, and (b) London Stratford, next to the Olympic Park (but see Technical Note 51). If either or both options are taken forward, passengers would not be permitted to make UK-only journeys but instead would have to travel between that stop and either Lille or Paris. All seats are advance-booked, so passengers joining or leaving mid-route could be allocated seats in specific carriages to avoid wider disruption.

Using existing security proposals

UK Government policy requires main rail stations to be capable of screening domestic passengers and their luggage with portable screening equipment. A secure passenger handling area at Manchester Piccadilly could have a segregated passenger route from adjacent underused land with a border control point to platform 1. The screening systems used for political party conferences at Manchester Central are tested and robust. Platform 1 availability for domestic services between 07:00 and 21:30 is retained. The Gare du Nord station in Paris already has secure international passenger handling facilities. UK Government policy is for all *inbound* border controls to be enforced at the journey start train station on the Continent by British officials, rather than at the end of the journey into the UK. The UK Government has a TRANSEC group of officials within the Home Office who will appraise the Security Programme of a new operation, and whose agreement must be obtained prior to operations starting. More details are shown in Technical Note 49.

Learning from previous projects

There will be some critical appraisals of this proposal, which is reasonable considering the failure of previously proposed regional-continental rail projects, the so-called ‘North of London’ services. For completeness, this background is summarised in Appendix 3.

Securing regulatory support

It is understood that the Government’s position on a proposal such as this is that public funds are not available and the private sector should run this service as ‘open access’. Within this constraint, from correspondence, “the [UK] Government is interested to explore any innovative solutions that may overcome the operational constraints in running trains from north of London to the continent.”

Responses from informal and preliminary consultations to date have been received from the following organisations:

- Le Ministère de l’Ecologie, de l’Energie, du Développement durable et de la Mer (French Government)
- Association of Chief Police Officers
- Borders and Immigration Agency (now UK Border Agency)
- Channel Tunnel Safety Authority, UK Secretariat, at ORR
- Department for Transport (UK Government)
- Greater Manchester Police
- HM Treasury (UK Government)
- Manchester City Council
- Steer Davis Gleave, and
- UK Permanent Representation to the EU (UK Government);

and their comments to date have been used to adjust the design of this scheme, although of course this proposal is not thereby endorsed.

Commercial potential and costings

The profitability of this proposal is based in part on yield or revenue management systems, and in part on infrastructure and similar charges being set at realistic and competitive levels. Profitability will be higher if a train operating company already has sunk costs such as train leases with capacity for further use. This project creates value by optimising the downtimes of existing train stock and using spare track capacity in order to achieve customer benefits.

Technical Note 36 in this document gives further details on revenue management and on dynamic pricing. A study by Sibdari and others published in 2008 showed that dynamic pricing for an Amtrak service can create a 26% increase overall in revenue across the whole selling period of 11 months prior to departure, and within this period a 31% increase in the revenue that could have been gained in the last 10 days prior to departure (Sibdari 2008, page 182). Armstrong and Meissner (2010) summarise revenue management systems for railway companies. With a general range of 25% to 30% extra revenue to be gained, dynamic pricing within the bookings system will be central to the revenue management of this international night train service.

Revenue forecasting is in large part a function of passenger demand forecasting. The UK rail industry uses the rail Passenger Demand Forecasting Handbook (PDFH), with version 5.0 released in August 2009. The UK Department for Transport issues online Transport Analysis Guidance (www.dft.gov.uk/webtag/) on how elements of the Handbook must be used when making submissions to the Government, specifically TAG Unit 3.15.4 (August 2012). While the proposal here for a Night Train service between Paris and Manchester does not need to provide a forecast of passenger demand to be submitted to the UK Government, nevertheless the guidance provides a useful framework to consider likely passenger demand from a business perspective.

The forecasting of rail passenger demand is influenced at a general level by the following factors:

1. Market segmentation, matching ticket type to journey purpose
2. External environment, especially economies and spatial populations
3. Inter modal competition, between rail and air travel here
4. Service-related factors (fares, journey time, punctuality, crowding, and hygiene)
5. Quality-related factors (rolling stock and station standards)
6. Lags, showing how demand changes may be phased over time.

These six factors of demand are each considered in more detail in Technical Note 39.

Another aspect of revenue forecasting in the context of UK rail and an ‘open access’ train service is known as ‘revenue abstraction’ from the ORCATS system. Revenue abstraction is where funds are shared between train companies on the basis of analysing the data of passengers who used trains run by different companies to complete their journey and dividing out the fares paid as a result. This proposal for a Night Train between Paris and Manchester would be open access but would not be involved in revenue abstraction because it is self-contained. There may be through-ticketing sales for connections beyond Paris and Brussels but this would be done with bilateral commercial arrangements.

Barriers to implementation

Although the Regional Eurostar trains and routes were technically ready to operate in the UK, because of the changes made to the West Coast Main Line in the years that followed their initial design, there is now a need to revisit the ‘compatibility matrix’ which ensures that the type of train (probably the Regional Eurostar, 373/2-type) can still run on the WCML. Regional Eurostars are approved for using the North

London Line spur which connects HS1 towards the West Coast Main Line.

The compatibility study includes a checking matrix that the type of train is suitable for signalling, loading gauge (width and height), structure clearances, electro-magnetic safety, selective door opening at short platforms, power demand, wheel-rail forces and damage potential, coupling and rescue, and depot facilities (the latter are not needed in this case).

Establishing permission for a train path in the national timetable

Agreeing a new train path can take up to 18 months to finalise, depending on the extent to which the train operating company has existing permissions and competences in place. Firm train path rights can be contracted for periods of up to 10 years.

Eligible rolling stock

As noted in this plan, SNCF currently operate the most-eligible trains for a service such as this one on their domestic services within France, and their unavailability could be a barrier to entry for other EU train operating companies.

However, the independent report of the events on 18/19 December 2009 when five Eurostar trains of the same design all failed and most became stranded within the tunnel, has led to the conclusion that less reliance should be placed on tunnel trains having to split in two and ‘self recover’ and with more emphasis now on their prompt rescue and recovery by standby locomotives. This newer method has started to lead to a wider acceptance of tunnel-permitted types of passenger train, some of which are now at the test phase for safe operating within the tunnel, including considerations of trains less than 375m long, including the ICE-type trains mentioned above.

Compatible signalling systems

There is a need to ensure that international trains are compatible with the various local signalling systems they encounter. For high-speed rail these signalling systems give drivers information in-cab instead of

looking for trackside signals at high speed. This in-cab system is called TVM430, and is fitted to the Regional Eurostar trains and to the Javelin trains. The UK signalling system of AWS is also fitted to Javelin trains as well as TVM430. AWS was also originally fitted to the Regional Eurostar trains, but it may need refitting if it has been removed in the meantime.

Seeing beyond London is important as well. It would be foolish to ignore the attraction of London as a destination for continental train operating companies wishing to start services through the Channel Tunnel and onto HS1. The concern is that such commercial advantages overwhelm any consideration of services beyond London (see also Technical Note 50).

Future growth options

If the demand grows substantially for this overnight train service beyond the 279 seat capacity of a half-set Regional Eurostar train, there is a medium term option to consider a full-set train (558 seats). This would require approval for the Network Rail element of the journey because the full-set train is 320m long whereas UK trains are normally less than 245m long. This length of train could use Platform 1 at Manchester Piccadilly as-is with selective door opening agreed, alternatively it is feasible to extend the length of this platform to accept 400m international trains. (Technical Note 16 explains intermediate options, and Technical Note 17 discusses half-set Regional Eurostar trains.)

Track access charges

A concern of train operating companies seeking to make use of open access permissions is that track access charges might be raised to such a degree, in this case southbound by Network Rail for WCML and NLL, then HS1, Eurotunnel for the Channel Tunnel and finally RFF (Réseau Ferré de France) for lines to Paris, that any operating surplus will be cancelled out by high charges. Ideally there would be recognition that the economic, social and environmental benefits of overnight passenger services should inform affordable levels of track

access charges. Medium to long-term pricing stability will be key to providing investor confidence in projects such as this one.

In particular the track access charges for the Channel Tunnel are very high in comparison with all other sections of the journey, reported to be 15 times higher per kilometre than HS1 track and 30 times higher than for Network Rail track. This high charge is currently subject to legal proceedings led by the European Commission (see Technical Note 42) and may well reduce in future years, transforming the market and benefiting the train operating companies which are best prepared to take advantage of the lower operating costs that may result.

Recently, HS1 Ltd consulted with interested parties on a fair method to reduce their track access charges for passenger trains in order to encourage further use of the infrastructure, where the HS1 Investment Recovery Charge (£70 per train per minute) is likely to be significantly reduced. These reductions have already been applied to Eurostar services (see Technical Note 40).

As a preliminary estimate, the Commercial Case below is based on the calculations in Appendix 1 (Technical Notes 24.1 and 24.2), and subject to the comments about reasonable track access charges throughout the path, and subject to the capacity of the train-type chosen.

Outline Commercial Case, Annual Costs	
	£m
Farebox income	11.1
Network Rail, HS1, CT, RFF charges	-4.4
Incremental maintenance and renewals costs	-0.9
Incremental train operating costs	-1.7
Station operations, marketing, staffing costs	-2.3

3rd party agreements	-1.0
Government payments	-
Total cash flow	0.8

Next Steps

A full business case needs to be produced and diligently appraised to prove the concept for investment.

Appendix 1 - TECHNICAL NOTES

1. On capacity issues on the WCML, there is a general acceptance of Network Rail's view that the West Coast Main Line will be full by around 2024 based on the current rate of growth in track utilisation. However, after 20:00 (8pm) the interval between major services such as London-Manchester widens from 20 to 30 minutes. This can give more capacity for new services overnight than during the daytime, where the WCML returns to peak demand around 07:00 (7am). This service capacity depends in part on the number of train paths 'sold' to other companies (for example for occasional freight trains) even if they are not always actually used.

2. From private correspondence, to date trains such as the Pendolino (class 390) have not been certified to run with passengers through the Channel Tunnel, and are said to require modifications to get some of the materials in carriages changed to meet 'fire load' standards. Pendolinos are ready to use the ERTMS system for automatic train protection, but both HS1 and French track to Paris use the TVM430 in-cab system, so driver cab refitting would be required.

3. The Eurostar train operating company has most of the Channel Tunnel-approved train sets: 22 being UK maintained; 8 Belgian; and 32 being French. Mostly the Eurostar train types are 18-coach 373/1 trains known as "Three Capitals". However, seven are shorter 14-coach 373/2 trains known as "Regional Eurostar". Of these seven, six are recorded as being in "domestic use" by SNCF, numbered 373204, 373205, and 373225 to 373228. (Source: Rail Guide 2010, by Colin J. Marsden, Ian Allen Publishing). The usual seating arrangement for a 14-coach Regional Eurostar is 114 first class and 444 standard class, which for a 7-coach Half Set is 279 passengers in 57 and 222 seats respectively.

"The train height is 3.77m, the width is 2.81m, and power is 12,249kW. The owner is shown as Eurostar and the operator as SNCF. ... When the Eurostar fleet was built by Alstom, one extra

driving car was produced, which could operate as required without modification in any Eurostar set, either a Three Capitals or North of London unit. The vehicle was allocated the number 373999 and was originally allocated to North Pole [depot], being transferred to Temple Mills, when London operations moved from Waterloo to St Pancras.” (Source: Rail Guide 2011).

4. The Intergovernmental Commission reported in 2007 that one of its “priority issues of concern into the future” is that it expects it will have “to consider any applications relating to new rolling stock that railway undertakings wish to use for services transiting the tunnel”, being different types of trains to those of Regional Eurostar trains.

5. With the possible HS2 high speed rail link the journey time from Manchester to Paris will improve to around 3h45m, but until the new high speed link from Manchester to London opens the journey time will be around 5h30m on existing tracks.

6. There was “a significant improvement in Eurostar’s revenue profile [which] has been achieved since the introduction of Leisure Select and Business Premier travel classes” said Richard Brown, Eurostar UK Chief Executive at a Railway Study Association meeting in London on 11 February 2008.

7. The “government and High Speed One are in negotiations with both the French and German state railways to run new services [into] St Pancras once the new open access arrangements for international lines imposed on the government by the European Union come into force next year [2010]” Source: RAIL journal, issue 621. Note the assumption that all services into the UK will end in London.

8. The range of options for taking this night trains proposal forward could be:

- a) an existing large-scale train operating company,
- b) an existing medium-scale train operating company, or
- c) establishing a new small-scale train company,

all using open access rules.

These options are probably in increasing order of complexity and therefore decreasing order of likelihood, and partnership working through joint ventures is a standard solution. Some of the existing large-scale train operating companies have previously seen this proposal as requiring public subsidy beyond the existing infrastructural investments, which remains at odds with the UK Government view. There is an opportunity here, therefore, for one train operator to get an advantage by taking a different approach.

9. The French train company, SNCF, is reconfiguring its night train services from hotel-type sleeping carriages to seated carriages, branded *iDnight*, and running a greater proportion of night trains to and from Paris. Keolis UK Ltd is a company within the SNCF family.

10. The German train company, Deutsche Bahn, is reported as the largest EU train company, and marked its entry into the UK passenger train market with its acquisition of Laing Rail, owner of Chiltern Railways. The EWS train company was mostly known for transporting freight, but also has a licence to run passenger trains within Britain, and had experience of freight train services such as Manchester to Milan direct. EWS has been fully owned by Deutsche Bahn since 2007, now known as DB Schenker, which concentrates on freight. DB Regio concentrates on passenger services such as Chiltern Railways.

11. There have been proposals at various times to increase the platform capacity at Manchester Piccadilly station with an additional ‘platform zero’. Manchester Victoria station will have more platform capacity due to the Oldham and some Rochdale services transferring to the Metrolink tram service. Manchester Victoria reportedly used to be the start for some international ferry services up to the 1960s such as the Belfast Boat Service via Heysham; and Manchester Piccadilly was a stop on the route of the Blackpool – Harwich boat train.

12. The requirement for interoperability (freedom of movement for EU train operators across the EU rail network) is based on technical

specifications for interoperability (TSIs) which include safety considerations. The Safety in Railway Tunnels TSI applies to rail tunnels up to 20km, with an allowance for additional site-specific safety requirements for longer tunnels such as the Channel Tunnel which is 50km.

13. There have been three major incidents of fires starting on trains within the Channel Tunnel (18 November 1996, 21 August 2006, 11 September 2008). These incidents have been caused by freight trains, and in particular shuttle trains carrying lorries. In 2011, four fire suppression chambers costing £20m started being built within the Channel Tunnel at 10-minute travel intervals, and these chambers work by using high-pressure water mist to extinguish flames before extensive damage is done, and then to cool surfaces.

14. The Channel Tunnel overhead wire power supply is 25kV AC, built to the UIC gauge, with the TVM 430 system for automatic train protection. The infrastructure varies across the EU especially away from main lines, however this route is entirely 25kV AC for power, and is AWS and TVM430 for signalling.

15. There are current regeneration schemes adjacent to both Manchester Piccadilly and Manchester Victoria train stations, the latter known as *NOMA*. Any proposals affecting station usage or investment will need to dovetail with these schemes.

16. Trains in the UK are currently limited in length to 245m, and the standard 14-coach Regional Eurostar train is 320m and the 18-coach ‘Three Capitals’ Eurostar train as currently used into London is 394m long. A 7-coach half-set Regional Eurostar if with two locomotives is 180m. A 9-coach Regional Eurostar train (220m) would fit Manchester Piccadilly Platform 1 (242m) with all doors opening. Adding extra coaches to a half-set train requires a depot and a crane to lift the extra coach bodies onto the bogies, because two adjacent coaches share a common bogie.

17. The possibly most practical train layout is shown below (Table 1), based on no refitting of the current internal carriage designs except perhaps for the 24 seats in the First Class carriage.

Train	Code	Class	Passengers		Toilets
			1 st	Standard	
Loco	DM	-	-	-	-
1	MSO	Standard	-	48	1
2	TSO	Standard	-	58	1
3	TSO	Standard	-	58	1 (Disabled)
4	TSO	Standard	-	58	1
5	RB	Bar-Buffer	-	-	-
6	TFO	Business Club	33	-	1 (Disabled)
7	TBFO	First Class	24	-	1

$$\underline{57} + \underline{222} = \mathbf{279} \text{ passenger capacity.}$$

Table 1: Regional Eurostar, Class 3732xx, Half-set Train Layout

Class 373 Eurostar

Built 1992-96 by GEC Alstom / Brush / ANF / De Dietrich / BN Construction / ACEC

Supply system - 25kV AC 50Hz,
 3000V DC overhead,
 750V DC 3rd Rail †
 1500v DC overhead ‡

† probably removed now

‡ fitted to 5x 373/1 trains for South of France usage

Max Speed: 300 km/h

Couplers: Scharfenberg

Source: Inter City Railway Society, UK Rail Series No.7, UK Electric Units 2010, 1st Edition.

“Software upgrades are believed to be required to allow the units to operate independently as a half-set.”

Source: http://en.wikipedia.org/wiki/Regional_Eurostar

18. Eurostar is member of the Amadeus ticket booking system, which is more commonly used for airline reservations, and this would be an option here too.

19. In November 2010 the UK Department for Transport published a 20-page guide to outline the approvals process for a scheme such as this one, titled: “2010 Rail Liberalisation of International Passenger Services, Contact Guide for New Operators”; available online.

20. The original Regional Eurostar proposed services included an international train depot at Longsight, Manchester. This proposal does not require a new depot facility at Manchester, nor in the UK, assuming only that the retention tanks can be serviced elsewhere.

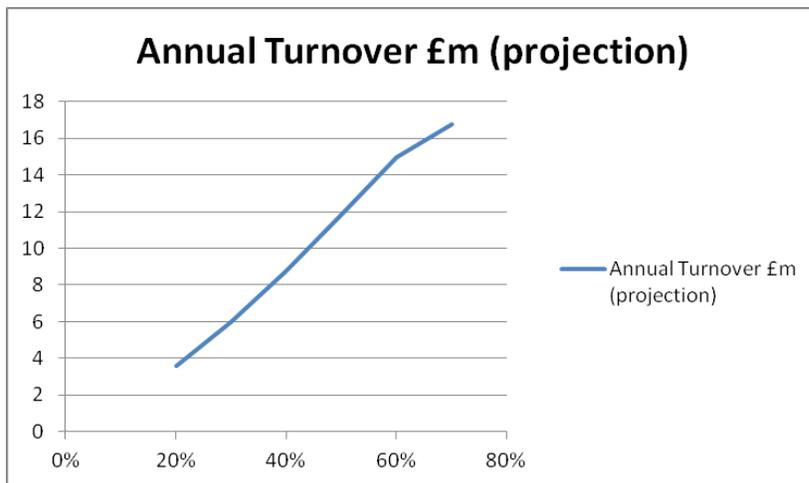
21. In order to run trains through the Channel Tunnel a railway undertaking requires a ‘Part B certificate’ granted by the Channel Tunnel InterGovernmental Commission (IGC) via the Channel Tunnel Safety Authority (CTSA). An undertaking based in the UK also needs to first obtain a ‘Part A certificate’ granted by the Office of Rail Regulation (ORR). These certificates need to be obtained by railway companies because safety regulations since 2006 base the assessment on the safety competences of the *organisation’s competences* and not as previously on a description of the technology the organisation was proposing to use within the railway system.

22. Before the 2008-on recession there were over 39 000 passengers a month flying between Manchester and Paris, based on Department for Transport figures. Eurostar services were reported to be carrying

9.5m passengers in 2010 with an average 65% seat occupancy, and passenger numbers have risen steadily since services started in 1994. Manchester Piccadilly has 54 300 passengers a day, with the strongest ABC1 catchment in the North of England.

23. The £199 previously advertised price for ‘Leisure Select’ from London indicates a current comparable price for first class, and the “from £59” web advertised price is the minimum standard fare, and with Advance tickets set at £29 per journey for marketing against the advertised headline air fares. Yield from ticket sales would be optimised online (see Technical Note 36) and would be based on the maximising “from £” airline pricing model for all categories except Advance.

24.1 Turnover - based on the formula applied to the Layout above [Note 17], and an indicative pricing schedule and spread shown in Tables 2 and 3 below, based on an 18% market share, gives an annual revenue of £10.2 million to £11.1 million depending the two revenue optimisation assumptions shown. These retail prices are highly attractive when compared with the competitor offers of train+hotel or plane+hotel costs. The graph below shows a sensitivity analysis for different loading percentages, and includes an optimisation algorithm for total-fare changes in each market category as the loadings change.



Graph 1: Projected turnover based on train loading

Single Fare					
Category	Number	Loading	Lower	Upper	Revenue per departure
First Class	24	20%	£149	£189	£811
Business Class	33	25%	£99	£139	£982
Leisure+	58	30%	£79	£139	£1,897
Standard	116	86%	£59	£99	£7,881
Concessions	36	90%	£39	£99	£2,236
Advance	12	100%	£29	£29	£348
Total	279	63%			£14,154
Actual passengers	175	Ratios	50%	50%	
Annual turnover					
			£10,275,942		

Table 2: Farebox income projections at 63% loading – 50:50 assumption on revenue mix.

Single Fare					
Category	Number	Loading	Lower	Upper	Revenue per departure
First Class	24	20%	£149	£189	£850
Business Class	33	25%	£99	£139	£1,048
Leisure+	58	30%	£79	£139	£2,105
Standard	116	86%	£49	£99	£8,380
Concessions	36	90%	£39	£99	£2,624
Advance	12	100%	£29	£29	£348
Total	279	63%			£15,355
Actual passengers	175	Ratios	30%	70%	
Annual turnover					
£11,147,723					

Table 3: Farebox income projections at 63% loading – 30:70 assumption on revenue mix.

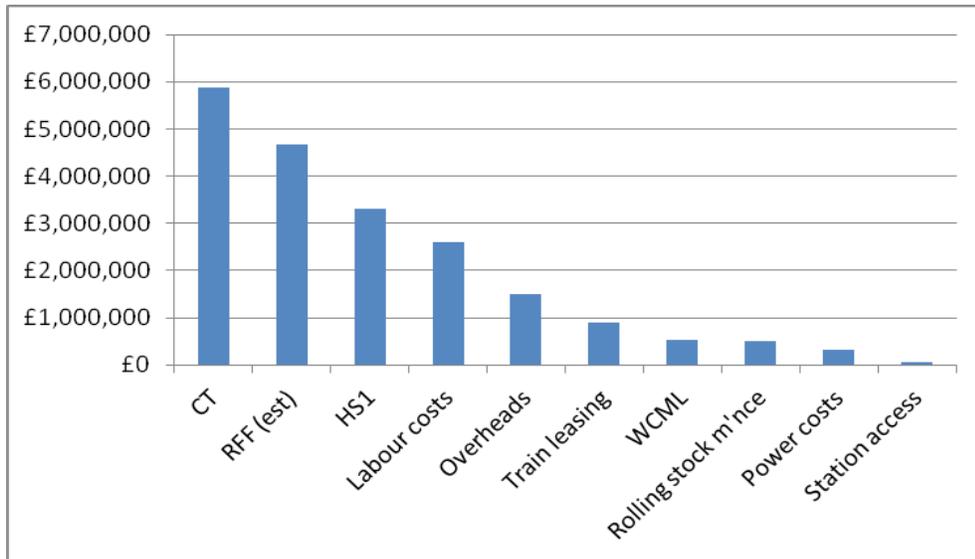
Channel Tunnel use	£5,873,007
RFF use (est)	£4,672,447
HS1 use	£3,311,286
Labour costs	£2,604,768
Overheads	£1,500,000
Train leasing	£900,000
WCML use	£526,350
Rolling stock maintenance	£505,800
Power costs	£335,334
Station access	£66,008
Sub-total	£20,295,000
Operating margin	£2,029,500
Total	£22,324,500

Table 4: Annual Operating Costs, estimated, showing track access charges, model 1.

24.2 Operating Costs – as can be seen from the estimated Operating Costs, the top three largest cost elements are track access charges

outside of Network Rail, where the unsubsidised commercial viability of this proposal depends to a large extent on the extent to which track access charges will be reduced to levels that are competitive with other modes of transport.

Turnover / Operating Costs: Current track access charges would model the ratio at 51% (10275 / 20295), but this ratio could be at 109% (10275 / 9433) when track access charges become more competitive and with all further revenue increases based on improved passenger numbers above an average loading of 63%.



Graph 2: Annual Operating Costs, estimated, showing track access charges, model 1.

Labour costs	£2,300,000
RFF use	£1,700,000
HS1 use	£1,300,000
Channel Tunnel use	£900,000
Overheads	£900,000
Train leasing	£900,000
WCML use	£526,350
Rolling stock maintenance	£505,800
Power costs	£335,334
Station access	£66,008
Sub-total	£9,433,492
Operating margin	£943,349
Total	£10,376,841

Table 5: Annual Operating Costs, estimated, showing competitive track access charges, model 2.

25. In April 2007 the UK Rail Freight Operators' Association proposed some schemes to the Department for Transport for possible inclusion in the next railways High Level Output Specification (HLOS) that would contribute to the findings of the Eddington Report. One of the proposals was:

“Currently the maximum gauge permitted on the routes from the Channel Tunnel to London and beyond is W9, which accommodates

some mainland European gauge vehicles but does not maximise the traffic potential. To increase the volume of business available to rail there needs to be a two stage gauge enhancement project: (a) to enhance gauge to W12, which allows the movement of additional European rail vehicles and deep sea containers, and (b) to enhance a route linking the Channel Tunnel Rail Link with the West Midlands, North West and Yorkshire for full European gauge traffic. Together these gauge enhancements will allow rail to compete for new traffic and generate a greater level of traffic between the UK and the Continent.” (source: DB Schenker website). The term W12+ is sometimes used to emphasise the full clearance also needed for a high-voltage overhead wire, for example under bridges and through tunnels.

26. A Regional Eurostar TGV 373/2 train set will need to run on the West Coast Main Line (WCML) at 110mph (175 km/h) because of the adjacent daytime and evening train paths being used by 125mph (200 km/h) Pendolino tilting trains. The Regional Eurostar is a *non-tilting* high speed train, so is limited to this running speed on the WCML. It then runs faster (180 mph, 300 km/h) on the straighter High Speed track between London, the Channel Tunnel and Paris.

27. Although the suggested service here dovetails into existing SNCF services between Paris Gare du Nord and Lille Europe, there will be some impact on the ‘train diagrams’ used by SNCF because the selected morning and evening services currently use different train sets, and overnight maintenance will need adjusting for the proposed train set/s. ‘Train diagrams’ describe how each particular train is used throughout the day within the network, including being empty between services, where they stand overnight and where and when they have maintenance.

28. The West Coast Main Line (WCML) is connected to HS1 (previously known as the Channel Tunnel Rail Link, CTRL) by continuously electrified track, from within two miles of Euston to within two miles of St. Pancras.

In detail: on the WCML at the Primrose Hill Tunnels 1.5 miles from Euston there is a twin track connection to the North London Line (NLL) with overhead electrification throughout. These twin tracks pass a disused island platform called Primrose Hill. After Camden Road station there is Camden Road Central Junction where a track leaves the NLL to the south, still with overhead wire, using two flyover bridges (to cross seven tracks leading into London St. Pancras International) to join directly with HS1 at 1.4 miles outside St Pancras. This route also allows trains from the WCML (and from the East Coast Main Line) to call into the international departure platforms 5 to 10 at St. Pancras.

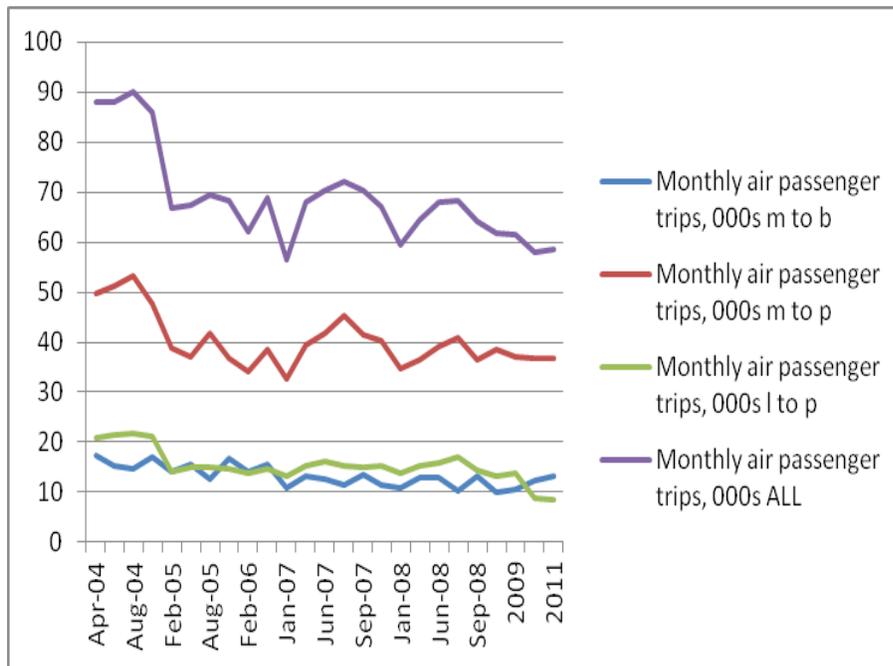
Source: Railway Track Diagrams, No.4 Midlands & North West (2nd Edition 2005), and No.5 Southern and TfL (3rd Edition, 2008), both by Quail Track Diagrams, TRACKmaps. (booklets)

29. It has been announced that phase one of HS2 will include a connection to HS1 which avoids through trains having to use the NLL, and that this connection is currently proposed to be a single-bore tunnel near Chalk Farm between HS1 and HS2 with a capacity of four trains an hour in each direction. (Source: House of Commons statement, 20 December 2010).

30. There are informal reports Transport for London are apparently concerned about the possible increased levels of future services into and around St Pancras station, where TfL are understood to be keen to protect north London commuter services and have raised concerns about the need to disperse crowds from stations as reasons for objecting to certain services using St Pancras and hence connecting with HS1. Notwithstanding this wider debate, *this* proposal does not require access to St Pancras station, only uses a few miles of the North London Line (details in Note 28), and only at off-peak times.

31. Market share: The Eurostar service to Brussels is reported to now have an 80% market share of the air+rail passenger journeys from London. The proposal here is based on an assumed market share that is below 20%, a figure which represents Manchester achieving only a quarter of the modal switch compared with that in London, as a

cautious planning approach. In detail, rail figures for a service from Manchester are based on: 387 passengers x 2 journeys x 30 days x 45% loading = 10,449 which requires under 18% of the air+rail market share. The graph below shows the summer season peaks each year as well as the underlying level of demand all year.



Graph 3: Monthly air passenger figures for Manchester/Liverpool to Paris/Brussels; Source: Civil Aviation Authority (CAA) website, Extracts from “Table 12.1”. Scale: single trips in thousands.

m = Manchester, p = Paris CDG, b = Brussels, l = Liverpool

32. The Paris correspondent of UK newspaper *The Independent*, John Lichfield, was reported to have interviewed Guillaume Pepy, President of the SNCF French railway company, where “he talked of night trains through the Channel Tunnel ... all visionary stuff.” (RAIL journal, 16-29 January 2008, p28-9).

33. The following two *press items* concern possible international services from cities North of London when they are connected to the proposed High Speed 2 track.

“Cross-border security issues won’t harm European links say politicians

None of Britain’s main three political parties see cross-border security and passport checks as a bar to international trains from Britain’s regional stations. Asked at the High Speed Summit if such checks were compatible with international trains, Andrew Adonis, Teresa Villiers and Bill Bradshaw all said they were confident such checks would not stand in the way. Adonis said he hoped more UK cities would have direct European trains, to undercut short-haul aviation. It’s likely that international trains would need segregated platforms at regional stations, although they are not features of international trains on the continent.” Full quote. Rail journal, issue 627, 23 Sept - 6 Oct 2009, p11

“New Lines - international services too difficult

There is a glaring gap in Network Rail’s New Lines Programme launched on 26 August [2009] - international services. ... [The reason stated by Network Rail is that they anticipate] ‘significant difficulties in developing a timetable that has this level of interaction across long distance lines’. In other words creating reliable paths between, say, Manchester and Birmingham and Paris and Brussels, is too difficult. ... But when push comes to shove, I can’t see the metropolitan authorities of the West Midlands and Greater Manchester supporting a highly disruptive building programme which doesn’t give their cities through services to Europe.” Extract: Modern Railways, October 2009, p26-27.

34. The following list from 2002 shows the maximum length of train which may be used at passenger stations. Trains longer than the quoted lengths will only be accepted subject to the authority of the area network manager.

Station	Platform	Length
Manchester Piccadilly	1	242m (preferred option)
Manchester Piccadilly	6	282m

Manchester Piccadilly	7	282m
Manchester Piccadilly	13	280m
Manchester Piccadilly	14	268m
Manchester Victoria	3	262m
Manchester Victoria	4	262m

Table 6: Platform lengths at Manchester Piccadilly rail station.

35. The journal *Today's Railways Europe*, dated February 2011 issue 182, included an article titled: *Revival of Overnight Services?* which detailed:

Paris - Hamburg night trains re-introduced on 12 December 2010 by Deutsche Bahn, which had been withdrawn in 2008;

Paris - Berlin and

Paris - München night trains by DB increased from 4 a week to 7 a week;

Paris - Barcelona and

Paris - Madrid will be sustained by SNCF even when the new TGV (fast daytime) services open;

Paris - Italy being explored by Trenitalia and Veolia companies; and

Paris - Wien being explored again, having been closed in 2009.

36. Revenue Management / Dynamic Pricing

“Revenue management has transformed product pricing in transportation and hospitality. For example, tickets for the same airline flight may be sold at many different fares throughout the booking horizon, depending on product restrictions, the remaining time until departure and the number of unsold seats. It involves pricing and revenue optimization so that prices and product availability can be set and updated across selling channels to maximize profits.” (Source: Dr Arne Strauss, LUMS: Lancaster University Management School website, not dated.)

“Pricing and revenue optimization is a tactical function. It recognises that prices need to change rapidly and often and provides guidance on how they should change. This makes it distinct from strategic pricing, where the goal is usually to establish a general position within a marketplace. While strategic pricing worries about how a product should in general be priced relative to the market, pricing and revenue optimization is concerned with determining the prices that will be in place tomorrow and next week. Strategic pricing sets the constraints within which pricing and revenue optimization operates. ... improving pricing is often one of the highest-return investments available to a company.” (Phillips 2005: 1-2)

Yield management algorithms optimise revenue, for example by withholding some seats from cheaper early-booking value customers to sell at higher prices to later-booking customers in all classes, as started by the American Airlines company in the 1980s. Evolutionary algorithms (EAs) are used to solve dynamic pricing problems stochastically, especially where there are high fluctuations in demand. The added value of a Revenue Management System is usually 5% to 15% (Harvard Business Review), although some shops achieve 24% (Phillips 2005).

Book: Robert Phillips (2005), *Pricing and Revenue Optimisation*, Stanford University Press.

Journal Article: Alexander Armstrong, Joern Meissner. *Railway Revenue Management: Overview and Models. Working Paper* (available at <http://www.meiss.com>), Lancaster University Management School, 2010.

Journal Article: Soheil Sibdari, Kyle Y. Lin, Sriram Chellappan. *Multiproduct revenue management: An empirical study of Auto Train at Amtrak*. Journal of Revenue and Pricing Management. Vol 7, 2 172-184. 2008.

37. It has been commented that running trains overnight is an imprecise science, according to one person consulted – “Late night running is all about dodging maintenance possessions along with the

local services which are doing the same thing, it is quite an art in its own right.” The extra running time on the southbound leg of this proposed service allows for contingency time for such issues.

38 **Table 7:** Annual Audited Profit and Loss Accounts / Income Statements (Profit is after other costs, tax, and exceptionals).

Train Operating Company (year-end)	Turnover £m	Operating Costs £m	Turnover as % of Op Costs	Profit £m
Eurostar International Ltd (2009)	316.2	412.5	76.6%	63.5
Virgin Rail Group Holdings Ltd (2010)	802.8	735.3	109.1%	50.4
New Southern Railway Ltd (2009)	609.2	574.2	106.0%	28.6
Train Operating Company (year-end)	Turnover £m	Operating Costs £m	Turnover / Op Costs	Profit £m
First/Keolis TransPennine Ltd (2009)	245.9	210.2	116.6%	27.6
Northern Rail Ltd (2009)	576.1	551.7	104.4%	19.6
DB Schenker Rail (UK) Ltd	464.0	444.0	104.5%	19.0

(2008)				
London & South Eastern Railway Ltd (2009)	598.0	579.6	103.1%	16.0
Arriva Trains Wales Ltd (2009)	246.2	232.4	105.9%	10.1
First Capital Connect Ltd (2009)	450.6	443.8	101.5%	5.9
Chiltern Railway Co Ltd (2010)	123.3	127.6	96.6%	4.4
Hull Trains Co Ltd (2009)	22.3	19.0	117.3%	2.5
First Greater Western Ltd (2009)	766.7	775.5	98.8%	(9.2)

Source: TAS Publications and Events Ltd (www.tas-passtrans.co.uk), 2011.

39. The forecasting of rail passenger demand is covered at a general level by the following factors:

39-1. Market segmentation, matching ticket type to journey purpose

This is the standard practice of offering different ticket types (eg First Class, Business Class, Standard Class, Leisure, Family, Child, Senior, Concessionary) with different booking and travel terms and conditions as well as different prices, so that the revenue stream from each market segment is maximised. This includes differences between weekday and weekend travel choices, and daytime peak travel where appropriate.

39-2. External environment, especially economies and spatial populations

This relates to the economic characteristics of the catchment areas at the main stations used by the service. This service is targeted at the centres of prosperous city regions.

39-3. Inter modal competition, between rail and air travel here

There are two main competitors to this service – air travel and disconnected rail travel. Technical Note 31 describes the market share of air travel between Manchester and Paris / Brussels. Eurostar International Ltd are quoted as claiming that 40% of their passengers make an onward connection to a UK non-London destination.

“Eurostar reports strong growth in 2010 with sales revenue up 12% compared with 2009”

“Eurostar, the high-speed rail service between the UK and mainland Europe, ... announced a continued increase in overall sales revenue in 2010 compared with 2009. Sales revenue for the year is up 12% on 2009, from £675.5m to £760m. The number of passengers travelling on Eurostar in 2010 rose to 9.5 million compared with 9.2 million during 2009, an increase of over 3%.

The new Eurostar e320 will carry more than 900 passengers at speeds of up to 320kph.

Eurostar is a founder member of Railteam, a partnership between Europe's leading high-speed train operators that is developing simpler ways to book and travel on the fast-expanding, European high-speed rail network. Eurostar is Eurotunnel's biggest customer."

Source:

http://www.eurostar.com/UK/uk/leisure/about_eurostar/press_release/Eurostar_reports_strong_growth_in_2010.jsp , 2011

"Eurostar passenger numbers soar"

"Frequency of rail services to the continent is being increased over the next few months with an additional train being added every day on both the Paris and Brussels route, bringing the total to 18 and 11 respectively. This is to cope with the soaring number of passengers, especially from the North and Midlands to use Eurostar. At the same time, flights to Paris are being cut around the country, with Heathrow shedding eight services, bringing the daily total down to 37.

Birmingham and Manchester have both shed one of their daily flights to Paris as have Leeds Bradford and Newcastle.

In the first six months of the year, Eurostar carried 4.63 million people – an 18.3 per cent increase on the same period last year. But these figures mask a far greater surge in demand from people living outside London. Derby has seen the company's traffic almost treble. A number of other cities have seen demand more than double, including Durham, Huddersfield, Wolverhampton and Nottingham.

The opening of the new Eurostar terminal at St Pancras station has slashed journey times and boosted rail traffic as a result. Before, when services left from Waterloo, anyone going to the

continent from the north needed to allow at least half an hour to travel across London from Euston, King's Cross or St Pancras. The high speed rail line has also cut journey times by a further 20 minutes. Cities like Derby, whose train service goes straight into St Pancras are the biggest beneficiaries from the change, with passengers able to reach the heart of Paris in four hours and 50 minutes.

Allowing for both airport check-in and the time needed to get from Charles De Gaulle airport, the difference in the length of journey is measured in minutes rather than hours.”

Source: <http://www.telegraph.co.uk/travel/2522798/Eurostar-passenger-numbers-soar.html>, 2008

39-4. Service-related factors (fares, journey time, punctuality, crowding, hygiene)

Indicative fares are detailed in the Timetable and Costing Model as well as in the main section of this Business Plan.

Journey time is deliberately set to save on hotel costs.

Punctuality should be maintained because contingency time has been factored into the overnight leg of the service to allow for maintenance delays and diversions.

Crowding nor crush loading are not possible on this service because for security reasons all seats must be pre-booked and having any additional standing passengers is not an option.

Hygiene will be maintained by onboard staff duties including frequently refreshing the restrooms, plus additional services such as hot towels at-seat for some categories.

39-5. Quality-related factors (rolling stock and station standards)

The aim of the service quality standards will be to match or exceed passengers' expectations and experiences of overnight airline travel, including at-seat sleeping, dimmed lights, staff availability and surveillance, and comfort levels appropriate to the booking class.

39-6. Lags, showing how demand may be phased over time.

Given the novelty of this passenger service for the UK, and the UK general public's sceptical view of train services generally, it may take between one and two years of continuous and uneventful service before the demand level stabilises due to a combination of modal switch by some airline passengers plus some new demand generated from non-air travellers.

40. "New track access deal slashes Eurostar losses"

"Cross channel train operator Eurostar International recorded sharply reduced operating and pre-tax losses during the year ended 31 December 2009, according to its annual accounts.

The company, formerly Eurostar UK, was renamed on 31 December 2009, and the shareholding reconstructed ahead of the migration of this company into a single entity to own and run the Eurostar brand, with shareholdings held by SNCF and SNCB as well as LCR on behalf of the UK Government. The framework agreement was signed in February 2010 and the new arrangements commenced during the summer of 2010.

The company's reduced operating losses during the year came primarily as a result of a revised UK track access agreement with much lower charges. This took effect in August 2009 and saved some £45.2m compared with 2008: charges for the use of HS1 are now levied on a variable charge per train. Further savings can be expected in 2010, when the charges will have been in effect for a full year.

Following an exceptional write-back of impairment charges raised in previous years, primarily against the value of the Eurostar train fleet, the company returned its first ever net profit.

On the revenue side, the impact of the 2008 tunnel fire continued to be felt at the beginning of the year, whilst the ongoing recession and the much-publicised weather problems in December 2009 also dented patronage and revenue, with the result that these remained unchanged compared with 2008 at £316.2m.”

Source: TAS Publications and Events Ltd (www.tas-passtrans.co.uk), 2011.

41. “North of London” Eurostars to stay in France

“French operator SNCF is to renew its contract to hire six 14-car “North of London” Eurostar sets after a project for Deutsche Bahn to use them on a Brussels-London service (connecting with the DB ICE service from Frankfurt) during the London Olympics in July 2012 fell through.

“It is probable that the NoL sets will then be hired by the Nord-Pas-de-Calais region of northern France to operate its local TGVs from Lille to Arras, Dunkirk, Calais, Boulogne and Rang de Fliers. From December this year the service to Dunkirk will be more frequent, then in December 2012 the region hopes to launch its own TGV service from Lille to Brussels, with trains starting from Dunkirk or Arras. A joint project with Kent County Council to run all-stations Eurostar services from Lille to Ashford, Ebbsfleet, Stratford and London has been deemed too expensive because of Channel Tunnel access charges.

“There were seven NoL sets built, and after services for which they were proposed didn’t materialise Great North Eastern Railway used some for several years on East Coast Main Line York and Leeds services. Half of one set (3308) remains in store at Temple Mills, with the power car stored at Brush Loughborough. The other half of this set (3307) did go to France and is currently in use with 3303, whilst the

3304 half-set is stored at Le Landy (the SNCF hire is technically for 6½ sets, with ½ as a reserve).” David Haydock / Robert Pritchard.

Source: Today’s Railways, issue 119, November 2011, p70

42. “EU enforcement action over Channel Tunnel

“The European Commission has started infringement proceedings against the French and British Governments for their alleged ‘failure to implement legislation to open the market for rail services in the Channel Fixed Link’. The two Governments have until November to respond.

“The Commission is concerned at the lack of independence of the infrastructure manager and the implementation of common EU rules for access charges, pathing allocation and regulation.

“The Freight Transport Association in the UK welcomed the decision of the Commission. It said: ‘Rail freight use on the Channel Tunnel accounts for just 15% of its potential capacity, which is explained by the high access charges of £60 per km, compared with just £4 for High Speed 1 and £2 for Network Rail. Since the Channel Tunnel opened in 1994 rail freight going through it has not exceeded 3MT a year, despite the market having grown considerably.’”

Source: Modern Railways, November 2011

Added to this report is the following statement by Deutsche Bahn AG: “The Channel Tunnel and HS1 are the two most expensive piece[s] of infrastructure in Europe. If the level of these charges were closer to the European average for high speed lines the number of daily trains services could be expected to be significantly higher. ... Establishing new international rail passenger services is generally a very challenging task in terms of economic viability and operational stability.”

Source: page 70, Written and Corrected Oral Evidence, European Rail Market and the role of the Channel Tunnel, House of Lords

43. Developments in services, autumn 2011:

Nomad Digital has been contracted by Eurostar to fit wi-fi to their fleet of 373/1 trains.

Eurotunnel will offer a 10% discount on access charges for Ashford-Calais-Lille says Chief Executive Jacques Gounon, although journalists expect it may require a public subsidy to ‘kick-start’ any such project.

Eurostar reports sales revenues up 7% for Q3 2011 to £197m from £183m in 2010, and 5% up in year-to-date. Passengers numbers in January-September 2011 rose 1% compared with same period 2010, to 7.3m. Underlying increase is 3%. Business Premier sales revenues rose 2% in Q3 2011. The number of leisure passengers rose 2%.

Eurostar has launched a free mobile phone application to allow passengers to receive tickets direct to their phones, both iPhone and Android. A barcode on the phone screen is scanned at check-in. Bookings can be for up to six passengers, and Business Premier customers can amend journey details.

Network Rail has put out of action the rail section (chord) connecting the South Eastern Lines with the approaches to Waterloo, which was opened for Eurostar trains in 1994 but has been little used since their diversion to St Pancras International in 2007.

44. In giving evidence to a House of Lords Committee on 18 July 2011, the Minister of State, Department for Transport, Theresa Villiers MP stated: “The network statement [for the Channel Tunnel] sets out the [track access] charges, but I understand that there is a negotiation process between Eurotunnel and operators that want to come and use the Tunnel, so presumably there is scope for the parties to deal with one another to come up with a mutually agreeable price.”

Source: page 64, Written and Corrected Oral Evidence, European Rail Market and the role of the Channel Tunnel, House of Lords Committee on the European Union, Internal Market, Energy and Transport Sub-Committee.

45. “Taxpayers are funding rail depot for trains that only run in France

The Government is spending more than £300,000 a year on maintenance facilities for French trains commissioned as part of an aborted rail project that cost British taxpayers more than £180m. The Department for Transport spent ‘between £300,000 and £400,000 last year’ on mothballed facilities for the aborted Regional Eurostar project that would have provided a direct link between provincial cities and the Continent. The seven trains that were built to run these services – at a cost of £180m – are now used by the French train operator SNCF to alleviate rolling-stock shortages on its high-speed service between Paris and Lille. A depot built in Manchester to maintain the trains remains the responsibility of London & Continental Railways, a company that is wholly owned by the Department for Transport. It has lain largely unused since it was built in the early 1990s and London & Continental has to pay for its upkeep, though there has been no indication that it will ever be required for its original purpose. For many years a sign declaring ‘*Le Eurostar habite ici*’ (Eurostar resides here) hung on the building in the city’s Longsight district. Bruce Williamson, of the lobby group Railfuture, said: ‘One has to ask whether the Department for Transport are getting best value for money out of this asset. £300,000 a year could subsidise extra services.’ The chief executive of London & Continental Railways, David Joy, said: ‘Securing a new railway tenant or purchaser for the site remains the preferred solution. There have been inquiries from rail industry companies regarding potential uses of the main depot building, although as yet there is no firm proposal. We are reviewing where we can economise.’ The Regional Eurostar service was to have run services from cities such as Manchester and Glasgow to Paris and was part of the programme to build the Channel Tunnel, but was shelved after rail privatisation. The trains are owned by Eurostar International, which runs passenger

services through the Channel Tunnel. It leased them to SNCF for four years in 2007 and is likely to renew the lease, even though the trains could be used to reduce overcrowding on UK routes. Eurostar declined to comment on contract's value or whether it might run regional services in future.”

Source: The Independent, 10 October 2011, James Waterson.
<http://www.independent.co.uk/news/uk/home-news/taxpayers-are-funding-rail-depot-for-trains-that-only-run-in-france-2368113.html>

46. “About 10km outside St Pancras the line passes Stratford International station. ...While the Eurostar continues to pass through [Stratford] without stopping, other train operators have expressed an interest in making use of it for continental services, including one to the German city of Frankfurt.” Source: Mile by Mile, London to Paris; book by Reginald Piggott and Matt Thompson (2012), Aurum Press Ltd. (page 10). The running distance between St Pancras and Paris Gare du Nord is 491km / 305 miles. (page 102).

47. There are new international 200m 8-car trainsets (Siemens Velaro) being proposed by Deutsche Bahn, which are currently undergoing Channel Tunnel safety checks, and Eurostar is ordering ten 16-car 400m Velaro e320 trains (also part of the high-speed ICE train design type) from Siemens, valued at €600m, reportedly to travel direct to a range of city centre destinations beyond the existing routes of London-Paris and London-Brussels. However, while confirming a growing market, these ICE types of trains can only run on HS1 and not onward past London on UK classic rail such as WCML because of their Continental loading gauge (height and width) which is larger than the UK loading gauge.

48. The UK Office of Rail Regulation has issued the following guidance on starting a new rail operation - http://www.rail-reg.gov.uk/upload/pdf/387_cm.pdf - and on the criteria and procedures to follow when making decisions on an open access application - <http://www.rail-reg.gov.uk/server/show/nav.2409>.

49. The UK Home Office has responsibility for border security and control, and the most recently available policy position can be summarized as follows:

“The border security landscape has changed since the 2009 High Speed Summit [see Note 33] and continues to develop along with the thinking on future border control arrangements for new rail services; in particular where it is proposed that these will operate from stations other than where juxtaposed border controls are presently located. For inbound services, the location and arrangements for UK arrivals controls will be informed by arrangements for Schengen exit checks and these will require the agreement of the Schengen state(s) which will be served by the new rail route. Annex 6 of the Schengen Borders Code provides for these checks to be conducted at various points in the journey: on boarding the service, on-train or at the final station in the country prior to departure from the Schengen area.

“For services arriving and departing from UK stations that are not presently operating as designated international stations, there would need to be early discussions with the Department for Transport and, where appropriate, High Speed 1 in relation to station and rolling stock physical security, line access and other practical considerations.

“From a border control perspective, a prospective new operator would need to consider how and where Schengen entry checks would be conducted for services departing for the Continent and incorporate that into their proposed model. For arriving services, customs (goods) and police checks will also need to be considered. A further point to be aware of is that of operator liability for detention and removal costs in respect of any person carried who is then refused entry to the UK, including persons who lack adequate documents (passport, national identity card and visa if required) where a further carriers’ liability charge may arise in the future.”

50. Regional Eurostar train “set 3313/14 was used during acceptance testing on section 1 of High Speed 1 and in the process of over-speed testing, set a new UK rail speed record of 334.7 km/h (208 mph) in 2003. The set is named *Entente Cordiale* and has seen

use as a VIP charter train, having transported the Queen on a state visit to France and to the Entente Cordiale anniversary celebrations in 2004. On 12 June 2007 the unit was used to carry International Olympic Committee inspectors from Stratford International to London St. Pancras". Source: http://en.wikipedia.org/wiki/Regional_Eurostar

51. A possible option would be to include a stop at London Stratford to allow for the boarding and alighting of international passengers, for example using a timetable such as shown here:

Suggested Enhanced Timetable	Local times	
Paris Gare du Nord	18:28	
(Brussels Midi-Zuid)		18:56
Lille Europe	19:29	←
London Stratford*‡	20:12	
Birmingham International*‡	21:43	
Manchester Piccadilly	22:58	
Manchester Piccadilly	23:59	
Birmingham International*†	01:14	
London Stratford*†	02:45	
Lille Europe	07:30	→
(Brussels Midi-Zuid)		08:04
Paris Gare du Nord	08:33	
* option within business case		
† boarding only		
‡ alighting only		

However, the lack of a UK Border facility currently at London Stratford is a key barrier to this option, and for two service calls every 24 hours would require a combined domestic / international platform usage similar to that proposed for Manchester Piccadilly, but crucially at two separate times each day, and with one platform losing availability to domestic services in the earlier part of each evening. Therefore, this option will probably depend on UK Border facilities

already being in place at London Stratford to serve other international services as well as this one.

Appendix 2 - TIMETABLE AND COSTINGS MODEL

(costs are informed estimates at this stage)

	Distance (km)	Time	Train Hours	Local times
Manchester Piccadilly	0	00:00	00:00:00	23:59
Birmingham				
International* †	148	01:15	01:15:00	01:14
Lille Europe	477	03:14	06:31:00	07:30
(Brussels Midi-Zuid)				→ 08:04
Paris Gare du Nord	216	07:34	07:34:00	08:33
Approx distance, kms	841			
Time shift	01:00:00			
Decimal conversion	0.30			
Paris Gare du Nord			18:28:00	18:28
(Brussels Midi-Zuid)				← 18:56
Lille Europe			19:29:00	19:29
Birmingham				
International* ‡			22:43:00	21:43
Manchester Piccadilly			23:58:00	22:58

Annual Train kms	610566
Annual Train hours	4573.8
Departures	726

Cost Assumptions

Paid hours ratio	33
On cost ratio	1.17
Labour cost per hour	14.75

Rolling stock per set	900		
Variable Access	1.5386433	per train km	
Station Access	22.73	per station per departure	
Seating Capacity	387		
SO costs			
Labour costs		£	2,604,768
Station access x no.	4	£	66,008
Power costs		£	335,334
Rolling stock maintenance		£	505,800
		£	5,351,353
Overheads	estimate	£	1,500,000
Sub-total		£	20,295,000
Target operating margin	10%	£	2,029,500
Target revenue		£	22,324,500
Revenue per departure		£	14,154
Income		£	10,275,804
Surplus		£	
Calculated average fare	-		
Assumed load	-		
Annual Patronage	-		

NOTES

Total MML Access	-
Fixed MML Access	-
Variable	-
Train Kms	-
Cost per train km	-

Station Access	-	per station per year
Departures	-	
Cost per departure	-	
MML rolling stock	-	
No in fleet	-	
Annual cost each	-	
Power costs VWC	-	
Train kms	-	
Cost per train km	-	
Dry Lease costs	-	Pvpm
	-	Pvpy

A2.1. WCML and NLL charges

Variable Usage Charge for a Eurostar on Network Rail is 43.22p per vehicle mile for each Power Car and 9.49p per vehicle mile for each coach, plus a 1.13p per electrical vehicle mile EAU (Electrical Assets Utilisation) Charge, and an estimated Capacity Charge at £1.67 per mile on WCML.

Therefore from Manchester Piccadilly to Wembley at 182 miles would give a charge of £724.44 not including EC4T (Electric Current for Traction) or Station Access Charges.

A2.2. HS1 charges

Comparison Framework Agreement (these apply for longer than one timetable period, to assist in stable planning of train services)

A	Service Group	All
B	Vehicle Category	Class 373
C	IRC / Train / Minute	£69.57

D	Discount Factor	1
E	Chargeable Journey Time (minutes)	31
F	DI Costs OMRCA1	£7.16
G	DI Costs ORCA2	£12.80
H	LTOP Costs OMRCB	£19.50
I	Pass Through Costs OMRCC	£8.68

Eurostar (UK) Ltd Framework Agreement, August 2009,
Source: ORR website.

There is an Investment Recovery Charge (IRC, Column C) of £69.57 per minute, an OMRC charge (columns F to I above) of £48.14 per minute [and a Capacity Reservation Charge of 25% of the IRC charge which is only payable if the train slot is not used].

Based on a 31 minute journey from St Pancras to the Tunnel Entrance Boundary this would give a charge of £3,830 including EC4T (Electricity Charge for Traction) estimated at around £181.

A submission letter has asked for an additional, time-limited discount charge band to be agreed for offpeak regional-international passenger services which don't also serve London.

A2.3. Channel Tunnel charges

Time bands are: Intermediate 07h00 – 13h00

Peak 13h00 – 22h00

Off-peak 22h00 – 07h00 Monday to Thursday

Maintenance 22h00 – 07h00 Friday to Sunday

CT times are Central European Time, that is UK+1 hour.

All single journeys for passenger trains (140 or 160 km/h) are charged at €4,752 plus €16.60 per passenger (min 350 passengers per train), except for off-peak slots which are charged at €3,680 plus €14.20 per passenger. (2009 prices, plus inflation minus 1.1% annually, using £1 = €1.20).

Thus, per train departure, 2 journeys a day, 363 days a year, where one the northbound journey is in peak time and the southbound journey is in off-peak/maintenance time:

$(363 \times €9732) + (156 \times €7940) + (207 \times €5869) = €5,986,239$ a year;
€8245/£6871 per departure.

A2.4. RFF charges (tbc).

Appendix 3 - HISTORY OF PREVIOUS PROPOSALS

A3.1. This section is included for lessons learnt. The general title used in the UK rail industry for the idea of passenger train services from the European continent to stations other than in London is ‘North of London’ services.

A3.2. The idea of ‘North of London’ regional services as part of the Eurostar rail project started in the 1980s. It was included in legislation and had £180m spent on early developments, but did not come into service. This current proposal is different and innovative, and learns from previous works.

A3.3. The history around the ‘North of London’ developments are briefly summarized in this timeline:

- 1980s Non-London train services included in legislation for Continental trains
- 1990s Train operator applies for Channel Tunnel passenger night trains licence
- 1994 Channel Tunnel opens with Eurostar from Waterloo, not North of London
- 1995 Connecting daytime trains from Manchester Piccadilly direct to Waterloo
- 1997 Connecting daytime train services to Waterloo ended, as underused
- 1998 Train companies will only bid for ‘North of London’ if subsidised
- 2000 Government publishes the ‘Little Report’, no market for North of London
- 2000 North of London ‘paths’ are removed from the national rail timetable
- 2003 North of London ‘paths’ reinstated on appeal by rail regulator
- 2004 Pendolinos enter service on West Coast Main Line to London Euston
- 2005 Train operator applies for Channel Tunnel passenger night trains licence
- 2007 High Speed 1 track opens, connects Channel Tunnel to St Pancras
- 2007 North of London trains (Regional Eurostars) leased to SNCF
- 2007 EWS ‘open access’ safety case agreed by Intergovernmental Commission

- 2007 Europorte 2 'open access' safety case similarly agreed
- 2009 Government starts negotiations with EU train companies to access UK
- 2010 EU law requires open access to UK rail network for EU train companies
- 2011 More types of trains expected to be allowed through the Channel Tunnel.

A3.4. Some sleeper trains were built a few years ago but never used, instead being sold to Canada to recoup some of the losses. These sleeper trains were impractical because they needed more electric power from the overhead wires than was available at the time. There was not enough power for the engines and for the 'hotel standard' fully equipped sleeping rooms. At-seat night trains only need electric power at the levels already available.

Innovation with Manchester to Paris night trains using existing rail resources: Outline Business Case

Imagine an overnight train service between Manchester and Paris using *existing* stock, routes and speeds. The benefits to passengers would be –

- to arrive in the centre of Paris or Brussels by 9am local time
- to be able to stay in each city region until after 6pm local time
- to save money by avoiding hotel costs, and
- to have a greener travel option to short-haul air.

This business plan started as an idea in 2007 on two sides of paper just as a leaflet. Everyone who saw it seemed to say, ‘good idea but the problem you have here is...’

So each problem had to be investigated and dealt with convincingly. Five years on, the business plan has developed and matured into what an outline plan should cover, with additional notes covering all aspects from marketing to pricing to rail paths to train layout to station platform details.

This idea has been a *pro bono* proposal from the outset, placed in the public domain for any interested enterprise to explore and run with.



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