

# Feasibility and Planning - Our Projects

## The Copenhagen S-train Circle Line Client: Rail Net Denmark

The establishment of the S-train network circle line started in 1996 and ended January 2007 with the opening of Ny Ellebjerg Station. Atkins was lead consultant, responsible for the entire project management, rail engineering design, preparation of tender documents and performance planning.

The 13km long circle line consists of a reconstructed previous freight/ S-train line, and a new double-track line. A large part of the assignment concentrated on the railway engineering design and preparation of the optimal traffic outline design. Atkins was responsible for the preliminary feasibility studies, where S-train, light-rail and metro solutions, respectively, were reviewed. In addition, Atkins was responsible for the subsequent EIA analysis and public consultations.

## Arlanda Airport Light Rail Express, Stockholm, Sweden

The high speed light rail airport link comprises 20km of new infrastructure under the ownership and control of Banverket, and 22km of new infrastructure owned and operated by A-Train.

Within A-Train's infrastructure is 7km in tunnel and three stations in tunnel under Arlanda Airport. Privatised in 2003, the line links the City of Stockholm with Arlanda Airport.

Atkins provided technical advisor due diligence services to Macquarie Bank Limited to assist them in acquiring the 40-year concession for the operation of Arlanda Express. Services included advice on asset condition, operating organisation, operations and maintenance.

Since January 2004, Atkins has been supporting the lending bank, WestLB, during the syndication process and will subsequently act as technical advisor until 2009.





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## Channel Tunnel Rail Link

Atkins was appointed as a specialist geotechnical consultant to Eurotunnel, the owners and operators of the Channel Tunnel project.

Atkins' role included:

- Review of the risks presented by the ancient landslips to both temporary and permanent works and of the methodology for engineering geological and hydrogeological investigations, slope stability analyses and construction controls.
- Review and checking of foundation systems for terminal buildings and road/rail bridge structures.

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- Assessment of feasibility for the placement of marine dredged sand as bulk fill and of compaction requirements for ground beneath buildings.
- Evaluation of a reinforced earth retaining structure founded on old landfill adjacent to buried high voltage cross-channel electricity cables. This structure supports the main railway line leading to the UK tunnel portal and consideration was given to the effects of vibration on internal stability, the durability of the reinforcing elements and tolerance to different settlements.

## High Speed Line Client: Strategic Rail Authority

A strategic feasibility study was required to establish whether there was a transport and business case for constructing a new high speed railway line in the UK from London to the North. Planning on this scale required a considered view to be taken of the potential long-term demand for travel and ways in which this could be managed or accommodated by High Speed Line or other alternatives.

The interface between new High Speed Line infrastructure and the existing railway network was a critical issue for the SRA, particularly in the light of changing priorities for the rail network during the course of the study. The SRA needed to be satisfied that HSL solutions did not compromise performance on the existing railway or benefits to passengers.

Atkins Solutions and Added Value

Atkins employed specialist Geographical Information System (GIS) software on an unprecedented scale to develop potential HSL options and to appraise their environmental impacts.

As high speed rail operations have not yet been fully experienced in the UK, it was also essential to gain an understanding of how passengers might react to a new high-speed, ultra-reliable city-to-city rail service. Atkins therefore carried out 3,000 surveys of existing rail, car and air passengers, to probe the factors that would affect their choice of travel mode. The results from this extensive survey and original research programme underpinned our subsequent demand forecasts.

### Technical and Managerial Services Provided

- Railway Planning, Engineering and Operations
- Market Research
- Demand Forecasting
- Economic and Financial Appraisal
- Environmental Assessment
- Project and Risk Management
- Cost Estimation
- Project Planning and Property Advice
- Stakeholder Consultation





## Key Benefits and Success Factors

Atkins delivered technical and managerial excellence which will enable the SRA to make informed decisions about the future of the UK rail network. A robust analysis was carried out of whether there is a need for new rail capacity in the long term and how HSL performs in environmental, safety, economic,

accessibility and integration terms against other forms of intervention. Alternative ways of structuring and financing the project were also considered and a forward plan for project development and implementation was developed.

## King's Cross Western Concourse Business Case Development

Atkins was commissioned by Network Rail to develop their Business Case for the proposed Western Concourse at King's Cross station. This new concourse replaces the existing Southern facility which faces demolition and replacement by a public square adjoining Euston Rd.

Atkins developed an approach that estimated the value of the improved station facilities from 3 separate sources:

- PDFH Edition 4.1
- TfL's Business Case Development Manual (BCDM)
- SDG's 2000 Report for SRA ('Rail Passenger Quality of Service Valuations')

This approach valued the incremental improvement of each of the station attributes

(e.g. lighting, shelter, etc.) The station benefit modelling also included manipulation of output from the PEDROUTE pedestrian modelling package, which showed the time saving benefits in access/egress/interchange for each journey purpose.

Demand generation from both the improved station facilities and the pedestrian time savings was estimated using MOIRA output for average yield, with LATS data to convert between ticket type and journey purpose.

## Thessaloniki Metro, Greece

The system comprises 10km of underground LRT system including 14 stations and a rolling stock depot. Atkins carried out a due diligence review covering the full range of technical issues, including design, operation, construction methods, metro engineering and capital costs. We also dealt with a wide range of

environmental issues, including archaeological features, noise and vibration, waste disposal of excavated material, air quality and community, amenity, and socio-economic implications of proposed partial cut and cover construction activities.

## Hong Kong KCRC: Shatin to Central Link, Admiralty to Central West

This project involved scheme and detailed design for two major underground stations and the connecting tunnel on the Shatin to Central Link. Admiralty station will provide a major interchange with the existing MTR railway network. Central South station will be constructed in cavern with adit and shaft links to ground level. The 1km tunnel will be excavated by drill and blast methods. Atkins is providing a full range of services from project management

and station planning through to system assurance.

