

# SOUTHDOWNS - HIGH SPEED RAIL EXPERIENCE

Southdowns is recognised as one of the UK's leading specialist providers of railway noise and vibration consultancy services. Staff have extensive experience in route selection and optioneering, consultation, planning, design, construction, commissioning, asset management and provision of expert testimony on a number of key UK and international railway projects. In particular, staff have had significant roles in the planning, assessment and delivery of the UK's first high speed railway High Speed 1 (formerly referred to as the Channel Tunnel Rail Link (CTRL)).



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consultants in acoustics, noise and vibration

Southdowns' personnel were continuously involved in advising the HS1 client organisation and the project's construction contractors between 1989 and 2007. During the early stages of the development, Southdowns personnel worked for the project's appointed noise specialists (Ashdown Environmental Ltd) and were directly responsible for route optioneering and appraisal, consultation and the preparation of the noise and vibration technical reports and chapters of the Environmental Impact Assessment in 1995. The extensive technical work required prior to submission of the project's Environmental Statement required the research and development of fully validated railway noise and vibration (and groundborne noise) prediction models using extensive field data gathered from French TGV, London Underground and other UK railway operations. Staff also provided ongoing support to the team responsible for gaining Royal Assent to the CTRL Act in 1996.

[www.southdowns.eu.com](http://www.southdowns.eu.com)

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In 1997, Rick Methold was seconded to Rail Link Engineering (RLE) for five years, where he became the manager of the in-house noise team covering routewide aspects relating to detailed design, planning, tendering and project managing the delivery of a design compliant with the Parliamentary noise and vibration commitments. Areas of involvement were wide ranging and included:

- Advising design teams and project engineers on specific mitigation measures to achieve noise and vibration commitments;
  - Liaison and negotiation with external parties (statutory bodies, local authorities etc), on detailed proposals submitted for planning purposes;
  - Detailed operational noise modelling of route to establish detailed noise barrier requirements and costs;
  - Detailed design of bespoke noise barriers and absorptive panels for surface and elevated sections of high speed line;
  - Development of technical specifications for the performance of resilient track systems for vibration and groundborne noise mitigation;
  - Development of tender documentation (inc. specifications) for the main construction contracts for the project;
  - Tender evaluation and technical interviews with tenderers;
  - Presentation of technical material to senior management on critical acoustical considerations and risks for project;
  - Training for RLE, Union Railways and Contractors on specific noise and vibration related issues;
  - Development of management system for Section 61 consents process across all contractors;
  - Auditing and site inspections to ensure compliance with the Project's Environmental Management Systems;
- Value Engineering workshops on noise barrier designs, mitigation of structure radiated noise and groundborne noise and vibration;
  - Managing the detailed Finite Element analysis of structure radiated railway noise within the proposed station areas of the new terminus at St Pancras;
  - Detailed modelling of aerodynamic noise from ventilation shafts due to the operation of ventilation equipment and passage of high speed trains;
  - Project management of numerous other acoustic testing and modelling programmes including:
    - measurements on in-line ventilation shaft components for aerodynamically induced re-radiated noise (laboratory);
    - dynamic stiffness testing of various resilient components for track form mitigation (laboratory);
    - scale acoustic modelling of forced ventilation equipment within tunnels (laboratory);
    - rheostatic braking noise profiles for Eurostar trains (field);
    - testing of noise barrier and absorptive panel designs (laboratory); and
    - Finite Element analysis of structure radiated noise from large elevated structures to assist in track form design.

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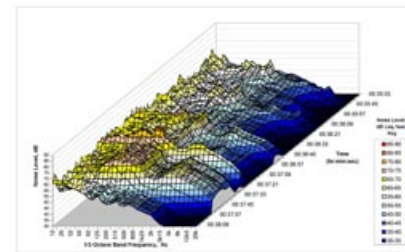
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Following our involvement at RLE, Southdowns was appointed by a number of the major civils and railway contractors to provide ongoing advice on noise and vibration during construction. These contracts included:

- Civils works - London Section;
- St Pancras International Station;
- Mechanical and Electrical Fit-out - London Section;
- Tracklaying - London Section.

Most recently, Southdowns was appointed to undertake detailed commissioning analyses during Eurostar trials to assess compliance with the project's noise commitments on ventilation shafts and draught relief shafts, and the commissioning of St Pancras International Station. Staff involvement for 18 years in this project has provided Southdowns with unrivalled and unprecedented experience and expertise for all stages of major high speed rail project development.

Other high speed rail project involvement includes detailed groundborne vibration and infrasound studies for Speedrail in Australia and station design for a high speed railway in Taiwan.



## Contact us

To learn more more about Southdowns' noise and vibration services please contact one of our directors (Phil Evans / Patrick Williams / Rick Methold) on +44 (0) 1273 488186 or by e-mail to [enquiries@southdowns.eu.com](mailto:enquiries@southdowns.eu.com)  
For further information on case studies, please visit our web-site. [www.southdowns.eu.com/projects](http://www.southdowns.eu.com/projects)