

# Rail Station Regeneration

## An evidence-based approach to the integration of transport nodes in cities



**A**  
Bristol Temple Meads Station Approach.

**B**  
The Bristol Predictive Movement Model highlights the importance of a public route through the Station.



**B**

“ Everyone involved has found the Space Syntax tool powerful and insightful. I think it will be pivotal to the next round of infrastructure investment and Network Rail’s approach to the future role of the station ”

Peter Wynn, Bristol Area Manager, HCA

### Investing in urban growth

Rail station land is typically located in central parts of the city which are well connected with their wider context. Rapid growth in rail demand and a return to urban living and commercial development presents an opportunity to exploit these locations and their associated footfall and to transform formerly underutilised industrial sites into attractive mixed-use places.

Today’s successful cities are collaborating with each other on the back of modernised railway infrastructure. Station area development can act as a catalyst and stimulator for city growth, unlocking economic prosperity and quality of life.

### The challenges of railway land regeneration

While railway land is typically well connected at the larger-scale, it is sometimes much less accessible to nearby communities. Railway infrastructure can create significant local severance from surrounding streets and public spaces. The resulting lack of integration with slow speed movement modes such as walking and cycling can hinder successful urban development.

Because of their largely industrial role in the past, many cities have turned their back on railway lands. Careful spatial design can turn this situation around.

As long as stations are mono-functional, movement is limited to high flows during peak hours, with low movement in-between. This reduces the types of commercial activities which are viable, reduces ‘ownership of place’ by its users and often attracts crime and anti-social behaviour.

Physical interventions to railway infrastructure are expensive and complex to manage. Investment needs to be well considered and targeted, and the risk of expensive failure needs to be reduced as much as possible. Land ownership is often highly fragmented and the development process involves a large number of stakeholders: land owners, rail operators, cities, communities and individual users. Space Syntax provides strategic design and spatial analysis services to address the complexities of railway development.

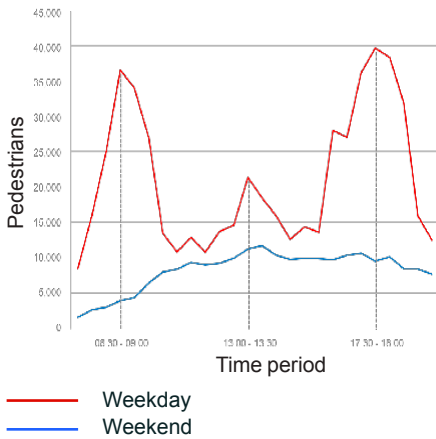
**What are the inherent potentials of any railway site to generate successful urban life?**

**How can new development be effectively knitted into the surrounding city?**

**How can investment be most effectively targeted to achieve optimal impact?**

# Map, Measure, Model, Make

## A science-based process for the creation of human-focused railway development



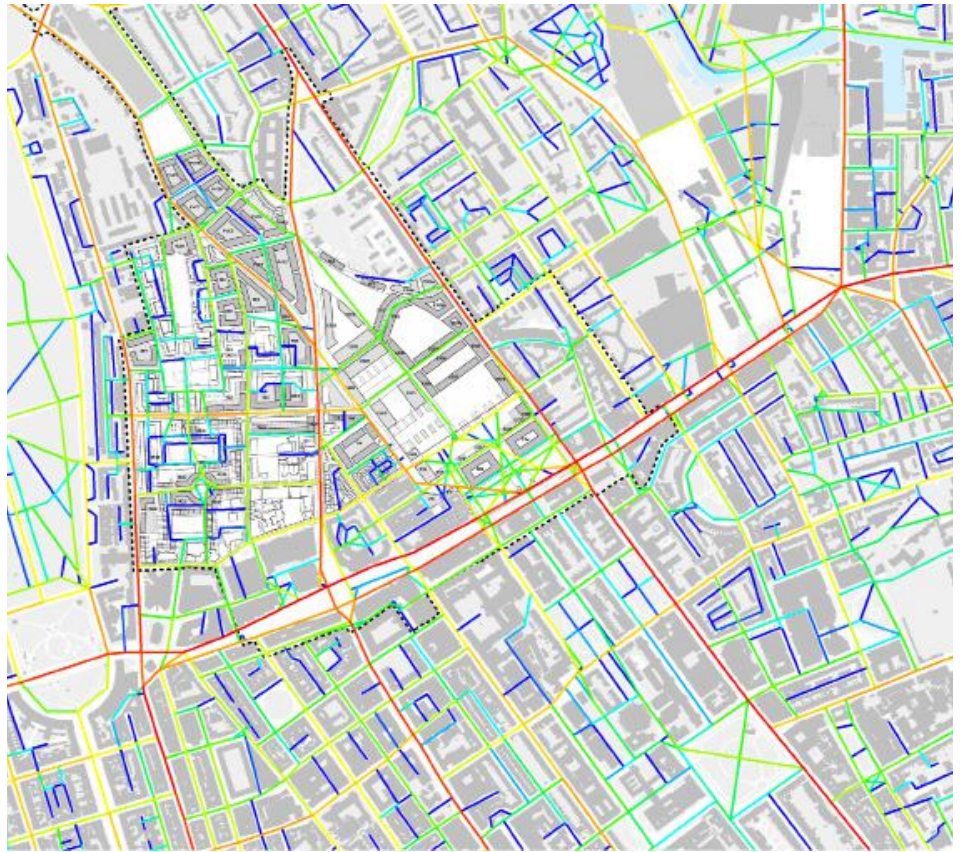
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Observed pedestrian movement patterns around Euston Station during a weekday and a weekend day.

D

Spatial accessibility analysis of the area around Euston Station for a future development scenario.



D

### The Space Syntax Approach

Space Syntax's connectivity led approach to place making has led to the development of a unique methodology for creating spatial strategies around railway stations, creating an understanding of impact well beyond the red line of the study area.

By taking a space-based and people-centred perspective, a set of tools has been created to explain and predict pedestrian behaviour.

Tried and tested in numerous project applications, this approach supports the design of 24/7 integrated urban environments that balance the needs of all users, maximise amenity and development opportunities and generate high investment returns.

Scenario modelling reduces investment risk, and highly graphic outputs facilitate stakeholder negotiations during the planning process.

### Map

Space Syntax's spatial network analysis begins by mapping existing movement networks to evaluate legibility, connectivity and wider spatial hierarchy as well as the location of transport nodes and other attractor land-uses which influence pedestrian behaviour.

### Measure

Patterns of vehicle, cycle and pedestrian movement are also examined and potential conflicts are studied. Spatial and temporal patterns in movement are identified and analysed.

### Model

Space Syntax's models are used to highlight key issues and predict movement demands for future development scenarios in order to identify where and what kind of investment is needed.

### Make space-led public realm design concepts

Projects deliver evidence-based policy and strategic pedestrian circulation development as part of integrated, multi-scale and multi-modal public realm developments in the context of the modernisation of railway infrastructure and regeneration of adjacent sites.

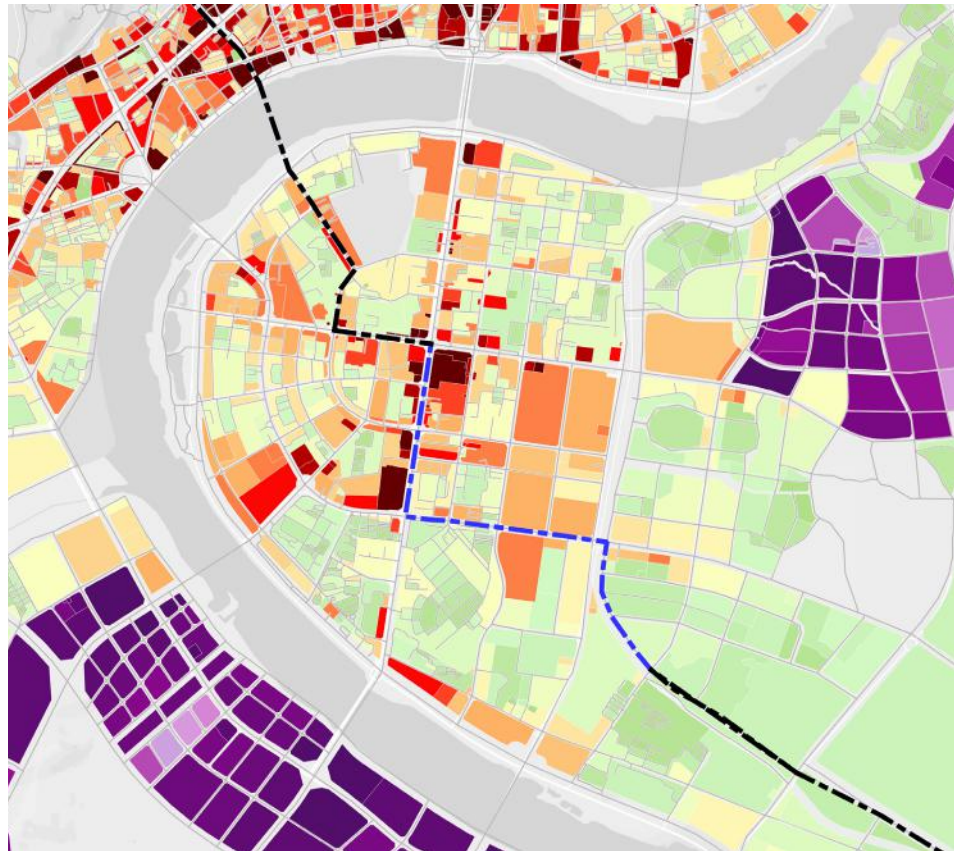


# Selected Projects

“ The promotion of ‘active modes’ is a key component of the Euston Area Plan Transport Strategy. Space Syntax provided TfL with an evidence-led planning tool that allowed us to successfully test complex network and land use configurations for the Euston regeneration area. ”

Phil Hawkins,  
Transport for London

**E**  
Block economic feasibility model used to assess the Metro line alignments by identifying corridors with highest potential for development.



## **Bristol Temple Quarter Enterprise Zone Predictive Movement and Connectivity Modelling, 2014 - 2015**

Development of a Predictive Movement and Connectivity Model as a tool to inform the initial design development stages and influence strategic decisions.

The Model was used to demonstrate the impact of the proposed changes in the spatial layout, the quantum of development and the transport growth on the pedestrian movement hierarchy within and around the site.

Space Syntax's recommendations were instrumental in developing the masterplan design and in facilitating stakeholder engagement during workshops.

For Homes and Communities Agency.

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## **Euston Area Plan Pedestrian and Cyclist Analysis, London, 2013**

Development of Pedestrian and Cyclist Movement Models to evaluate the localised impacts of increased flows related to the Euston Area Plan (EAP) and the introduction of HS2, and recommendations for public realm infrastructure improvements.

The analysis demonstrated how pedestrian movement patterns will respond to the changes in density, street layout and connectivity proposed by the EAP.

The resulting Pedestrian Movement Model is currently being used to forecast a 2030 future base for three EAP development scenarios and will inform related policy development.

For Transport for London with WSP.

## **Snow Hill Station Interchange Plan, Birmingham, 2012 - 2013**

Development of a Pedestrian Movement Model for the area around Snow Hill Station in Birmingham, to develop, test and prioritise key intervention projects for the emerging Snow Hill Masterplan and the Interchange Plan.

Our work was used at workshop and stakeholder consultations to clearly communicate and support strategic design decisions across both the multidisciplinary design team and the three client groups.

The strategic masterplan is now being used to develop detailed proposals for Snow Hill Station.

For Centro, Birmingham City Council and Colmore Business District with JMP and Alan Baxter.

# Why Space Syntax?

“ It is refreshing to see an approach that reflects the behavioural travel patterns of pedestrian and cyclists, so often the forgotten mode in transport modelling.”

Paul Speirs, Technical Director, WSP



F  
Proposed concept design for the Jiangcheng Square, Jilin City, China.

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## Jilin Public Transport network 2016 - 2017

The city of Jilin is in the process of implementing a world-class metro system. As well as positioning the metro lines to reach the optimum level of population, Jilin Rail Transit Construction Investment Co. Ltd. sought a strategy to improve access and movement to and from its proposed metro station locations.

The city of Jilin commissioned Space Syntax to analyse the development potential of different parts of the city, to optimise metro line alignments and to identify the best locations for stations.

## Jilin Public Space design 2017

Building on the work on the public transport network, Space Syntax were commissioned to design four public spaces in Jilin City. The design process of all four squares required a thorough analysis of the spatial structure and condition of their surrounding areas with respect to their role in the movement network. This was recognised as a key prerequisite for developing the concept design schemes.

Using our evidence-based Space Syntax approach, we analysed the spatial hierarchy surrounding the squares and have produced options that optimise desire lines to support pedestrian movement and wider site legibility.

## Why Space Syntax?

Space Syntax is expert, independent and widely respected for supporting public, private and community-based decision makers.

To find out how **Space Syntax** can help you, please contact:

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