



# D2 Rail

## PLANNING FOR SUCCESS

**T**he Ordsall Chord is a near-textbook example of Network Rail getting a project right. This means, of course, serving the public: putting their interests first by planning how the creation of a new piece of infrastructure affects every part of their lives, from the journeys they take daily - and how these will be impacted by disruptive blockades - to the urban landscape in which they live and work.

Arguably the most important rail project in the north for decades, the Ordsall Chord is a triumph of different disciplines working together as one collaborative unit. The Alliance consists of Network Rail as the client working in an equal, open and three-dimensional relationship with track partner Amey Sersa, signalling, power and telecoms partner Siemens and civil engineer partner Skanska BAM.

Also working with the Alliance were engineering consultants AECOM and Mott MacDonald, steelwork subcontractor Severfield and D2 Rail - the Manchester-based company that produces bespoke programme-management solutions for mainline and mass transit rail.

Now just a few weeks from completion, the Ordsall Chord's success lies in the meticulous planning that began years before construction. Simon Blair, planning director at D2 Rail, joined the Alliance team in 2011, eventually becoming planning and controls lead. This was four years before the construction of the Ordsall Chord began in 2015, which illustrates the extent of the advanced planning undertaken by Simon and the



Alliance team to minimise the impact of works on the city - the environment, the train and freight operators, the wide and varied number of stakeholders and the travelling public.

### Early involvement

When they first got involved in the project, Simon Blair and his team from D2 Rail started on a construction planning and assessment report. Integral to this work was the production of a robust possession strategy, fully bought into by the train and freight operating companies. Quite simply, the project wouldn't have been able to get off the drawing board without this.

Working at this stage with Parsons Brinckerhoff, D2 Rail and the Alliance team had to overcome stakeholder concerns. These were that, although they supported the principle of the Ordsall Chord, they didn't want its construction to be at the expense of the historic line into Liverpool Road station.

In the end, the serving Secretary of State for Transport, Patrick McLoughlin, took the view that the benefits of the Ordsall Chord were too great for it to be disrupted or delayed, but such was the wealth of experience and expertise within the Alliance that sufficient care could be taken to minimise the impact on heritage buildings.

Overcoming this challenge, and the vast amount of planning and preparation this required, strengthened the resolve of the team and set the tone for the unity and confidence of the Alliance, enabling the team to overcome all subsequent challenges with relative ease.

Four-dimensional planning - factoring time into the conventional visual plan - is another reason cited by the team at D2 Rail for the success of the project, and one it believes makes the Ordsall Chord quite unique. Key to this is having a well-developed process for overseeing and documenting any changes to the operation firmly in place. The moment a



change takes place on a project is when it is most at risk of losing contingency or project profitability if the risks aren't carefully considered. Change and risk management are two areas that dovetailed effectively on the Ordsall Chord.

Rail planning and scheduling is another important part of D2 Rail's role, and one to which Simon Blair gives special mention. Project planner Alesha Hancock worked alongside Simon and was notable for her management of weekend possessions on the Ordsall Chord, particularly as she came to the project to gain experience. After working on a number of projects in the Sydney area back in her homeland, Alesha moved to the UK to learn more about railway construction techniques and, with a

supportive sponsor in D2 Rail, she did just that while developing her live site experience at the same time.

She agreed to be plunged into this area of significant responsibility and her confidence and ability grew exponentially as a result. By the end, Simon regarded her as one of his most valuable team members.

#### Integrated BIM

Another aspect of the Ordsall Chord project, one that made it unique, was the use of Building Information Modelling (BIM). This saw the highly unusual arrangement of embedding steelwork technicians within the engineering team of the Alliance, with the design model and other deliverables prepared collaboratively - the reverse of the usual process.



Network Rail established clear BS 1192-compliant Level 2 BIM requirements from the outset, hosting a common data environment (CDE) to allow all suppliers to work together in an integrated BIM environment throughout the project. The shared information model simplified an unusually complex rail infrastructure scheme, enabled early release of information for construction and helped promote a shared responsibility for getting things right. The D2 Rail information management team provided training and support services to the Alliance in the use of this CDE, aiding collaborative working and ensuring the smooth day-to-day use of the system.

Almost without exception, the entire project was modelled under BIM guidelines. The federated BIM model was used in weekly interdisciplinary design coordination workshops and was the basis for construction planning, allowing design issues to be resolved and construction issues to be anticipated. »



On the River Irwell footbridge, by adopting the fabricator's technology platform, it became possible to deliver a true ready-to-fabricate BIM model. Four weeks were cut from the design programme, with associated cost savings. The number of drawings was reduced on four other structures by maximising the use of the BIM model, again saving time and money. This is believed to be a first in the UK bridge engineering industry.

The Alliance won the Tekla Global BIM Award in 2016 (Infrastructure category), as well as the Tekla UK BIM Award Public Vote category, for its work on the Ordsall Chord.

By introducing BIM practices at the development stages of a project, D2 Rail structures its clients' processes and ensures that all designs are compliant throughout the project lifecycle.



#### 4D and visualisation

The use of visualisation played a key role in the delivery of the Ordsall Chord Project. Initially, it was utilised within the consents submission, providing a multitude of different material. For public consultations, it was key to inform what the project was aiming to deliver, and this was successfully portrayed with the use of static visuals, photomontages and fly-through animations. It was also imperative at the GRIP 3 stage (option selection) that the project provided its options to the client supported by visual imagery.

As the project moved on to the planning and delivery stages, the use of 4D came to the forefront. D2 Rail took the lead by dynamically linking the programme to the GRIP 5 designs, providing a 4D construction sequence for key stages of the project. Using a dynamic link, any update would also be applied to the 4D animation, removing time/cost factors to replicate new sequencing.

When more detailed sequencing was required, D2 Rail's visualisation team played a key role in, for example, showing plant movements on site. This proved

crucial in working on a viaduct with limited operational space. Animations were provided showing an array of different plant movements, from crane lifts to the PEM-LEM's used for track laying. Utilising new techniques within the visualisation world, the team was able to adapt to changes quickly and work closely with the client under constrictive delivery constraints.

#### Collaborative to the core

Managing Director David Diesbergen launched D2 Rail in 2011, with the award of the contract with the Alliance coming the following year. The company established a base in Central Manchester in 2014, and in 2016 commenced a re-brand to coincide with its growth and pledge to offer trusted and innovative programme management solutions collaboratively.

It is this collaboration that has been at the very core of the Alliance, with all parties working together to fully understand the project and its challenges from every single angle, combining design with constructability reviews, information management techniques and considerate stakeholder planning throughout, alongside leading-edge 3D and 4D visualisations, in order to explore creative and innovative solutions in a seamless manner.

It's an approach that has been instrumental to the success of the Ordsall Chord, and now that this small section of crucial northwestern infrastructure is nearing completion, the Alliance participants look set to be in demand going forwards. ●





# Bespoke Project Planning Solutions for UK Mainline and Mass Transit Rail



## Project Controls

Our proven project controls function which, through robust reporting and sound programme management protocols, has allowed us to successfully support programmes of work that meet and exceed the clients requirements.



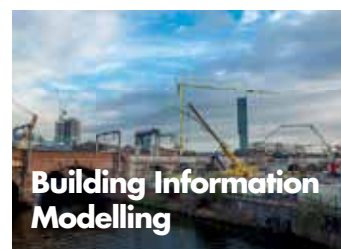
## Planning and Scheduling

We provide efficient construction planning ensuring early, continuous and consistent integration of construction knowledge into the conceptual planning, design, construction and operations of a project.



## Information Management

Our track record of delivering holistic management of project information is second to none. Understanding the challenges and complexities, allows us to setup and maintain an appropriate system.



## Building Information Modelling

By introducing the use of BIM practices at the development stages of a project, we are able to structure our client's processes and ensure that all designs are compliant throughout the project lifecycle.



## Tender and Bid Management

Our flexible approach enables us to find the best solution to satisfy the bid requirement and provides a clear approach to the execution of the tender works to the satisfaction of the end user.



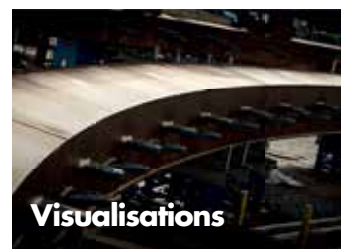
## Constructability

Our constructability review services allow us to continually evaluate railway solutions to determine impacts on project cost, schedule, function, and suitability.



## Stakeholder Liaison

We have demonstrable capabilities in stakeholder engagement from early construction development through to successful project handback on both small and large rail projects.



## Visualisations

Offering a vast range of visualisation techniques, from supporting client design phases, to consent and tender submissions, D2 Rail believe in the real added value of visualisation and its multiple features and benefits.

**Planning your vision,  
delivering your promise**



[www.d2rail.co.uk](http://www.d2rail.co.uk)

1 Ridgefield, 16 – 18 King Street, Manchester, M2 6AG  
t: 0161 258 7534 e: info@d2rail.co.uk