Case Study:  
Depots and Stabling  

Thameslink Programme

*Recommendations for future projects to understand the potential challenges when designing, planning and constructing depots and stabling berths for a new train fleet.*

**Key Challenges**

The arrival of the new fleet of Class 700 Thameslink trains demanded the creation of enormous new depots and stabling spaces. Space at this scale would either need to be found somewhere on the network and cleared especially for the programme or created/converted from existing facilities.

In order to meet the requirements of the Programme, timing would also be extremely tight. The 115 new trains would need dedicated space for servicing, cleaning and maintaining; there would need to be sidings for terminating or reversing trains and some temporary storage space where trains could be held until their required date for entry into service.

The existing depots and sidings along the route would not be large enough so it was decided that two new facilities would need to be constructed. This posed the team the geographical challenge of finding suitable brownfield sites that were large enough, located near enough to the railway and were close enough to London to avoid constantly running empty trains out to the depots.

Sites would need to be long enough to receive multiple 12-car fixed-length trains while also operating with minimal noise and light disturbance to lineside neighbours and local communities.

New depots and sidings were already operating at Brighton, Horsham, Selhurst, Cricklewood and Peterborough but none these were suitable for further expansion. Each of those projects had recently published their own lessons learned reports as part of the value management process at the time and these were used to avoid some of the same pitfalls.

The two extra depots’ construction would be managed by Thameslink Programme’s partner Siemens and their chosen construction contractor. There would be multiple interfaces required between Network Rail, Siemens, GTR, the construction partner and the incumbent train operators who were already using the existing sidings and depots and so would be affected by the new fleet arrival.
Choosing the two sites - Hornsey and Three Bridges

The existing Hornsey sidings in the London Borough of Haringey was identified as the preferred main ‘parent’ depot site but it would require a large upgrade and expansion of the facilities. A site at Three Bridges in Crawley to the south of London was selected as best place for the smaller ‘child’ depot. Both locations offered good connections to the railway and close proximity to the Thameslink route.

In late 2009, the Hornsey depot was refused permission by the local authority on grounds of its scale as it would have damaged a local conservation area. In 2011 revised plans were submitted for both the Hornsey and Three Bridges schemes, with the Hornsey scheme reduced in size, and the Three bridges scheme expanded. The Three Bridges depot would now have a five-road carriage shed; the Hornsey depot was to have a three-road carriage shed and the depots were expected to be opened in 2015 and 2016 respectively.

The proposed Three Bridges development also required a new footbridge to be installed over the Brighton Main Line to enable safe and efficient access between the two Depot areas either side of the tracks. This was achieved in December 2012, thus facilitating the construction phase. The main maintenance building would have a five-road, 280m-long shed with an adjacent train wash and a two-storey 117m-long warehouse. The southern site included sidings for 11 x twelve-car trains and 2 x eight-car trains.

Both councils insisted on Section 106 Developer Agreements which put obligations on Network Rail and Siemens to put particular focus on the monitoring and mitigation of noise and light pollution both during construction and in subsequent operation.

The Department for Transport put the design and build contracts for the two depots out to tender under the ‘Thameslink Rolling Stock Project Related Works’ scope. These contracts included the design and build of the trains combined with the heavy maintenance of the vehicles and the necessary maintenance facilities. These were ultimately known as the DAFL contracts (the Depot Agreement for Lease). The contracts were expected to be signed in 2011 but weren’t finalised until 2013 due to assurances required among the approx. 30-strong banking consortium.
At the southern end of the Three Bridges site, some land had to be compulsorily purchased to gain enough length to house the new trains. Also adjacent to the Three Bridges depot were the existing Tilgate sidings on Network Rail-owned land. It was agreed that this Tilgate area, largely non-operational, should be taken over by GTR for Thameslink operations with the creation of five 8-car sidings and so the yellow plant operator Balfour Beatty would be connected directly to the GTR leased area.

**Depot construction and fleet delivery**

Siemens appointed Volker Fitzpatrick as their principal contractor to manage the construction side of things at both their depot sites. These interfaces meant Network Rail, GTR, Siemens and Volker Fitzpatrick had to work very closely to ensure the depots met all stakeholder and operational requirements.

The depots would need to include carriage washing, controlled emission waste removal, wheel lathe provision, inspection walkways and, at Three Bridges, an Alternating Current test track for service reliability purposes.

During construction, the train operator couldn’t use agreed specific areas of the existing Hornsey Depot as it was being modified, with enhanced signalling control facilities installed. At certain times, trains had to be accommodated elsewhere on the network.

Where possible, materials were brought in and taken away by rail as well as road to reduce the local community impact.
The Three Bridges depot was completed and opened in mid July 2015.

- The first train arrived on 30th July 2015 just two weeks later.
- The first passenger-carrying train didn’t start operating until Spring 2016, after a period of driver and maintenance crew training.
- Trains arrived at a rate of one a week which put pressure on the Programme to get the depots completed and to find other available sidings for train storage on the wider network.
- Trains were dead-hauled to the UK from Germany through the Channel Tunnel. This meant they were non-operable on arrival and needed long-term resting places that would not interfere with the day to day running of the network.
- As trains arrived, there was a period of more than a year during which the new Class 700 trains needed storage space over and above the new depots and sidings. This resulted in negotiations with train operators to establish areas that could be released temporarily for this purpose, e.g. Cricklewood Network Sidings.

**The Three Bridges Traincare Facility**
The Hornsey Traincare Facility

Recommendations for the new depots

- Keep local councils up to speed with the safety requirements of the railway as they may not be familiar with the Rail Safety Standards Board requirements.
- Fully assess local lineside neighbour impacts for the effects of increased light and noise pollution. It may not always be obvious who will be affected, and real-world disturbances can be quite different to those modelled or expected.

Lessons learned from all the depots and stabling sites constructed

- Some features of the stabling sites were already designed and partially or totally built prior to the train designs themselves being 100% finished. As the trains began arriving, it highlighted very different issues to those imagined at the design stage. For example, the original depot design didn’t take into account the central driving position inside the train cabs which led to the extensive repositioning of stop-car markers at sidings and depots and along the entire route.

- At the stabling sites, the requirements between Network Rail, the builder, and the Train Operator were agreed well before the trains were constructed. After their arrival, multiple sites had to have facilities amended or added due to changed operator requirements or standards. The importance of making sure specifications are correct at the time of construction is urged.

- For the new depots, such large contracts can pose multiple financial risks to investors and these can in turn cause long delays at the banking level. This then puts strain on contractors awaiting payments to get started on the build so some form of guarantee and/or a warning of a late start to payments is wise.

- Although the 24 trains per hour target did not change, the original train service specification did. This meant that the implementation of the final timetable did not have sufficient space to house trains in the correct starting points. For example, stabling that would be required to operate the Maidstone service wasn’t planned in. This had
an ongoing impact which is still being resolved in 2019 to find extra depot space in Kent. It also meant that the entry into service on the Maidstone branch was long-term delayed to the frustration of passengers.

- The leased land area for the Three Bridges site was fixed before the infrastructure design of the depot was complete. This later led to depot exit signals being installed outside of the lease area. The south east signalling Route Access Manager insisted that Siemens would still have to maintain the signals themselves even though they were on Network Rail’s land. This is an unusual situation but not insurmountable.

Watch this short promotional film by Siemens that shows the depots in operation as the new train fleet began to arrive: https://youtu.be/D81rp2s-kks