

**CRL/4/1**

**Transport and Works Act 1992**

**Transport and Works  
(Inquiries Procedure) Rules 2004**

**CROXLEY RAIL LINK  
ORDER**

**Martin Morris**

**Principal Permanent Way Engineer, Sinclair Knight  
Merz (Europe) Ltd.**

**Summary of Proof of Evidence**

**ENGINEERING**

**11 September 2012**

- 1** My name is Martin Morris. I am the Principal Permanent Way Engineer working for Sinclair Knight Merz. My evidence concerns the Details of and the Construction Methodology for the scheme to construct the diversion of the Metropolitan Line from its current terminus at Watford Met to Watford Junction
- 2** The scheme involves installing a new junction in the Metropolitan Line at a point adjacent to Baldwins Lane and taking the railway on a new alignment on viaduct to Ascot Road where it joins the currently disused Watford Junction to Croxley Green Branch, utilising this alignment to the site of the former junction with the Watford Junction to London DC lines, from which point the existing DC line Infrastructure is utilised with upgrading to the power and signalling to facilitate the new trains.
- 3** The new section of line has been designed to LUL standards, whilst the existing section remains to Network Rail standards with both standards being considered at the platform interface.
- 4** The line will leave the existing route from London to Watford Met on a widened embankment adjacent to Baldwins Lane before crossing the A412 Rickmansworth / Watford Road, Watford Road Playground, Grand Union Canal, Beggars Bush Lane and the River Gade on a slender Viaduct. It will then cross the new and old Ascot Roads on a mixture of bridges and embankments before gaining the alignment of the Croxley Green Branch at Ascot Road. A new station will be built at Ascot Road together with park and ride facilities. The line will then follow the old alignment with a further new station to be sited adjacent to Vicarage Road to serve Watford Hospital and Watford football ground together with adjacent housing.
- 5** The structures along the new section will be a new viaduct which is required to enable the difference in levels between the two railways to be negotiated and ensure

adequate headroom for vehicular and canal traffic on the adjacent roads and canal. This viaduct will start at Baldwins lane and finish just short of the new Ascot Road from where an embankment will be constructed for a short section before crossing the two Ascot Roads on a series of bridges incorporating the new Ascot Road Station.

- 6** The railway will then run along the disused section of the former Croxley Green Branch generally staying on the old formation to ensure the minimum work requires to be undertaken to ensure conformity with LU standards. There are 3 overbridges which have been assessed by Network Rail (the current owners ) as capable of withstanding current highway loadings with no strengthening works required but some minimal repairs to minor structural defects.
- 7** There a number of underbridges which have been similarly assessed and items of work identified to strengthen, widen or provide footways adjacent have been identified as part of the project.
- 8** The existing trackwork, drainage and ballast is in a poor state and requires replacing with new as part of the project. The existing platforms at the derelict Watford West and Watford Stadium will be demolished. A new electricity sub station will be provided in the vicinity of Tolpits Lane to provide power for the route.
- 9** A permanent access route will be provided for maintenance during operation to the East of the new Watford Hospital Station. Maintenance will be carried out during non operational hours, potentially using battery powered trains.
- 11** All land along the disused line required for the permanent scheme is owned by the promoters and partners with the exception of a small strip of land close to Cardiff

Road which is owned by Sanctuary Housing Association and is required to provide a maintenance walkway over the bridge over Cardiff Road.

- 11** The location of Watford Hospital station has been determined in engineering terms by the current standards for platform gradients decreeing that the station must be a near to level as is practicable.
- 12** The line then joins with the existing Network Rail DC lines just after Wigenhall Road Bridge at a new junction. The existing route will require to be provided with: a fourth rail, additional signalling, power upgrade to facilitate the enhanced service, platform extensions and modification to the junction at Watford Junction to facilitate the platform extension.
- 13** The design principles reconciled the necessary technical and current design and safety standards adopted by LUL with other issues to ensure that the design is safe in operation and maintenance, together with a safe environment for the passengers and the members of the public who have this railway as their new neighbour.
- 14** As part of the application for the order HCC and LUL have made a request for outline planning permission to provide for all matters such as height, massing and external appearance of structures (including viaducts and stations to be subject to approval of the local planning authority).
- 15** Subject to approval of powers in response to the TWAO application, construction is expected to commence in the spring of 2014 and last for some 18 months with testing late 2015 and commencement of operation in 2016. The works will be undertaken in accordance with the project specific Code of Construction Practice

- 16 The earthworks methods to be adopted (especially the piled foundations to structures) will be chosen to ensure that the integrity of the chalk is maintained thereby reducing the potential risk of contamination to the chalk aquifers that underlie the general area.
- 17 The vehicle count associated with spoil removal and fill has been estimated on total removal from site of old and importation of new, however it is likely that a sizeable portion of the excavated material will be of sufficient quality to enable it to be used as fill reducing the number of vehicle movements. The steelwork for the new viaduct will be transported in sections circa 27m in length and bolted together on site prior to lifting into position. Temporary closures of roads and rights of way expected to be no longer than 48 hours in length are anticipated for the lifting operations. Subsequent lifting operations are not expected to require major road closures.
- 18 The anticipated durations for the major operations on the disused section are as follows: The viaduct and embankment works will take approx 52 weeks with some short duration road closures, Ascot Road Station will take approx 54 weeks with some short duration road closures, Tolpits Lane sub station will take approx 30 weeks with access from Tolpits Lane for construction traffic but no road closures, Watford Hospital will take approx 52 weeks with a prohibition of construction traffic during the morning and afternoon peak hours with further restrictions to movements and access via Vicarage Road bridge. There are numerous other items including embankment reinforcing, works on the existing under bridges and overbridges which will be programmed to fit into the major works items programmes. Track ballasting and laying will take place towards the end of the programme to suit the works on the other structures and earthworks required.

- 19 The track, power and signalling works to be undertaken on the existing DC lines of Network Rail are anticipated to be undertaken in four long weekend possessions and numerous smaller possessions causing minimum disruption to passengers.
- 20 Site compounds and work sites will be established at each pier and accessed via the roundabout at Baldwins Lane, Watford Road and Ascot Road. A work site compound will be established at Ascot Road on the site of the proposed car park and will be the main compound. A work site will be established at Vicarage Road but will be solely for the construction of the Watford Hospital Station. A work site will be established at Tolpits Lane for the construction of the sub-station and one will be set up at Wigenhall Road Goods Yard for trackworks. On the Network Rail infrastructure worksites will be set up at Watford High Street Station and Watford Junction Stations for the station and trackworks.