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Transport & Highways Proof of Evidence

On Behalf of:

Martineau Galleries No. 1 Limited and Martineau Galleries No. 2 Limited

In Respect of:

Proposed Midland Metro (Birmingham Eastside Extension) Order

Refs:

DPI/ P4065/17/9 AND TWA/16/APP/08

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Executive Summary

1. My name is Ruth Jeffs. I am a Chartered Civil Engineer with a BEng (Hons) degree in Civil Engineering and a Postgraduate Diploma in Engineering Management. I am a Member of the Institution of Civil Engineers and a Member of the Chartered Institution of Highways and Transportation. I am the Midlands Regional Director of Waterman Infrastructure & Environment. I am instructed by Martineau Galleries No. 1 Limited and Martineau Galleries No. 2 Limited (MG) to address the transport and highways issues related to the proposed Midland Metro Birmingham Eastside Extension, (BEE).

2. My evidence relates to the objections as set out in MG's Statement of Case, namely:
   - Ground 1 – "the current scheme proposals and the power to acquire set out in the draft Order goes beyond the power necessary to deliver the scheme and as such represents an unjustified interference with MG's property rights" and
   - Ground 2 – "the acquisition of rights to attach equipment to the buildings comprising plots 5 and 26 is unjustified".

3. MG owns long leasehold interests in a number of parcels of land affected by the draft Order. Those parcels of land comprise plots numbered 4, 5, 6, 11-16, 18, 20 and 25-28 and are identified in the Works and Land Plans [BEE/A11] and in the Book of Reference [BEE/A12] submitted in support of the Application.

4. The BEE is a 1.7km extension of the existing Metro network from the Birmingham City Centre Extension (BCCE) at the junction of Corporation Street and Bull Street to a terminus on High Street Deritend close to its junction with Heath Mill Lane.

5. I have reviewed the Works and Land Plans Sheet No. 1 [BEE/A11] and Cross Sections Sheet No. 6 and No. 7 [BEE/A11].

6. My examination of cross sections A - A, B - B and C - C has shown that for a straight section of two-way single carriageway to accommodate trams and vehicles a width of 8.6m to 12.2m is considered acceptable by WMCA for the BEE, within an overall corridor cross section of 13m to 18.7m to accommodate all road users including pedestrians, cyclists and buses.

7. Figure 1 appended to my proof shows a corridor cross section of 18.7m based on the Works and Land Plans – Sheet No.1 [BEE/A11] drawing. When you examine Figure 1 it is clear the limit of deviation and of land to be acquired or used, the area highlighted blue, is much greater than needed to deliver the BEE tramway system.

8. From my full review of the Birmingham Eastside Extension, Plans and Sections document prepared by WMCA [BEE/A11] and Volume 2 Technical Appendices [BEE/A13/2], it is clear that the section at Meriden Street North of Coventry Street is also a shared track similar to the section of BEE alongside MG's areas of interest. In my opinion, it is therefore reasonable to assume that the two-way carriageway/tramway width of 8.6m associated with Meriden Street North of Coventry Street could also apply to the section of BEE alongside MG's areas of interest, as opposed to the overly engineered corridor which is presently proposed.

9. In addition to the tramway/carriageway the corridor by MG's areas of interest must also provide for footway and a tramstop.

10. Table 11.1 of the TA calculates that the proposed 3.0m wide Albert Street North footway and the 2.9m wide Albert Street South both result in A+ Pedestrian Comfort Levels (PCLs). A+ is the highest PCL indicating that the proposals are suitable for the pedestrian flows. The corridor alongside MG's area of interest is defined as a low flow street so the total width can be reduced to 2.6m if there is no street furniture (except street lights) to allow space for people walking in couples or families and with prams etc. In other areas, low flow streets can be 2m wide if there is no street furniture. In my view, the footway allowed is significantly wider than would appear to be required in accordance with the guidance, and results in more land being identified for acquisition than is actually justified.

11. Guidance on Tramways Railways Safety Publication Part 2, Office of Rail Regulation (November 2006) [BEE/C1] states the needs of passengers, pedestrians and other road users should be reflected in the design of tramstops. It is my view that the island tramstop depicted on the application plans near MG's areas of interest is detrimental to local traffic and results in more land being identified for acquisition than is actually justified. In my opinion, the area would be better served by two roadside tramstops.

12. In the event the central island tram platform was replaced with two roadside platforms the U-turn facility is not required. By removing the U-turn facility more kerbside space is available to integrate the tramway enabling side platforms and on carriageway bus stops.

13. From measurement on site of the Stephenson Street eastbound Metro stop outside Birmingham New Street station, the tramstop and accompanying footway width is effectively 5.1m (comprising 2.9m tram stop, 150mm channel and 2m footway). In my view, the same measurement would be appropriate to apply as a maximum width for roadside tramstops adjacent to the MG site.

14. My review shows the optimum corridor width for a two-way single carriageway without tramstop is 14.5m, comprising footways of 3m and 2.9m together with a tramway/carriageway width of 8.6m.

15. With a tramstop, my review identifies a corridor width for a two-way single carriageway of 18.7m, allowing a 2.9m tram stop, 150mm channel and 2m footway on each side and a tramway/carriageway width of 8.6m.

16. Figure 2 appended to my proof shows the 14.5 m wide corridor and 18.7m wide tramstop zone based on the Works and Land Plans – Sheet No.1 [BEE/A11] drawing. When you examine Figure 2 it shows the limit of deviation and of land to be acquired or used, the area highlighted blue, is much greater than needed to deliver the BEE tramway system. The land proposed to be acquired therefore exceeds that reasonably required for the needs of the BEE.

17. Guidance on Tramways Railways Safety Publication Part 2, Office of Rail Regulation (November 2006) [BEE/C1] p.30 states structures supporting an overhead electric traction power supply system 'Should be positioned so that they neither significantly obstruct the highway nor are unduly exposed to damage from an errant road vehicle or tram.' The guidance goes on to state 'Electric traction supply poles with cantilever arms, or a system of span wires between traction poles' not just building attachments may be used to support overhead line equipment.

18. The draft Order identifies plots 5 and 26 as being within the limits of 'Land with Rights to Attach Equipment to Buildings'.

19. There are examples where Midland Metro uses poles rather than attachment to buildings so I consider it feasible to adopt a similar approach here. For instance, poles are used at different locations along Bull Street, located just to the north of this area, and along Stephenson Place on the approach to Birmingham New Street station. In addition, it is important to note Planning Direction Drawing Sheet No. 1 [BEE/A11] shows the corridor by MG's areas of interest is identified as an indicative location for OHLE poles so I believe it is recognised by the Applicant that it is not essential to fix the catenary to buildings in this locality.

20. This proof of evidence demonstrates that the current scheme proposals require more land to be acquired than is needed to deliver BEE. This document has reviewed cross sections and examined integrating the system into the highway and identified that significantly more land than is required is shown as land which the applicant will be empowered to acquire permanently.

21. My assessment of the cross sections of other parts of the Metro have demonstrated that the optimum tramway width for BEE is 14.5m rising to 18.7m with kerbside tramstops.

22. Therefore, the Order should be amended to reduce the land required permanently to construct BEE from the junction of Bull Street/ Dale End to Moor Street Queensway to reflect the optimum tramway width identified above, without an island tramstop and incorporating a reasonable limit of deviation consistent with such land requirements along other parts of the route. Any land required by the applicant for construction of the BEE beyond the optimum corridor and the reasonable limit of deviation need only be acquired on a temporary basis.

23. This proof of evidence also demonstrates that there is no need to attach equipment to the buildings comprising plots 5 and 26 as there is sufficient tramway corridor to accommodate poles in the footway. The Order should therefore also be amended to withdraw the rights to attach equipment to the building comprising plots 5 and 26.

1. INTRODUCTION

Qualifications

1.1 My name is Ruth Jeffs. I am a Chartered Civil Engineer with a BEng (Hons) degree in Civil Engineering and a Postgraduate Diploma in Engineering Management. I am a Member of the Institution of Civil Engineers and a Member of the Chartered Institution of Highways and Transportation. I have over 27 years' experience with Consulting Engineers in the fields of civil engineering, transport planning and traffic engineering, both in the United Kingdom and overseas. I am currently a Regional Director of Waterman Infrastructure & Environment with responsibility for all work, including traffic and transportation, undertaken in the Birmingham and Nottingham offices. I have been based in the Midlands for the last 17 years working on various commissions throughout Birmingham City Centre. For example, I was responsible for developing and gaining consent for the transport planning solution which has enabled the development of Paradise Circus and I also provided a cost-effective means for the extension of Midland Metro from Birmingham New Street Station to Centenary Square.

Scope of Evidence

1.2 I have been instructed by Martineau Galleries No. 1 Limited and Martineau Galleries No. 2 Limited (MG) to address the transport and highways issues related to the proposed Midland Metro Birmingham Eastside Extension, (BEE). I am familiar with the appeal site and the surrounding highway network. My evidence sets out the transport reasons for an objection to the proposed Order by the West Midlands Combined Authority (WMCA) to authorise the acquisition of rights and land to construct the Metro Extension. My evidence relates to the objections as set out in MG's Statement of Case, namely:

- Ground 1 – *"the current scheme proposals and the power to acquire set out in the draft Order goes beyond the power necessary to deliver the scheme and as such represents an unjustified interference with MG's property rights" and*
- Ground 2 – *"the acquisition of rights to attach equipment to the buildings comprising plots 5 and 26 is unjustified".*

1.3 The Order identifies land required permanently to construct the tramway and associated facilities, and land required temporarily to facilitate construction, demolition or landscaping. The Order also identifies locations where permanent rights are required to attach equipment associated with the tram system. This proof of evidence will demonstrate that the current scheme proposals and the power to acquire set out in the draft Order goes beyond the power necessary to deliver the scheme.

2. THE LAND AFFECTED

2.1 MG owns long leasehold interests in a number of parcels of land affected by the draft Order. Those parcels of land comprise plots numbered 4, 5, 6, 11-16, 18, 20 and 25-28 and are identified in the Works and Land Plans [BEE/A11] and in the Book of Reference [BEE/A12] submitted in support of the Application.

2.2 Plots 4, 6, 11-16, 20 and 25 are shown shaded blue on Works and Land Plans – Sheet No.1 [BEE/A11] comprising land within the 'limit of deviation and of land to be acquired or used'. They thus fall within the 'permanent limits' as defined by article 2 of the draft Order. As such the draft Order, if approved, would give the applicant power to permanently acquire the full extent of MG's interests in each of these plots of land.

2.3 Plots 18, 27 and 28 are shaded green on Works and Land Plans – Sheet No.1 [BEE/A11] and thus within the 'limit of land to be used temporarily'. Those plots of land identified in Schedule 7 of the draft Order as land of which temporary possession may be taken for the following specified purposes:

- Plot 18: Stopping up existing highway and replacing with landscaped area;
- Plot 27: Highway works alterations to car park access; and
- Plot 28: Construction compound.

2.4 Plots 5 and 26 are shown shaded yellow on Works and Land Plans – Sheet No.1 [BEE/A11] and are therefore within the limits of land with rights to attach equipment to buildings.

2.5 Plots 11-16 currently comprise a row of shops known as Kings Parade which is accepted will need to be demolished in their entirety to enable the BEE to be delivered.

It is not however, accepted that this land needs to be acquired permanently to deliver the BEE.

3. PROPOSED CORRIDOR WIDTH

3.1 The BEE is a 1.7km extension of the existing Metro network from the Birmingham City Centre Extension (BCCE) at the junction of Corporation Street and Bull Street to a terminus on High Street Deritend close to its junction with Heath Mill Lane.

3.2 I have reviewed the Works and Land Plans Sheet No. 1 [BEE/A11] which indicates the location of cross section A – A, at chainage 1,200m. This is located by MG's areas of interest. My inspection of Cross Sections Sheet No. 6 [BEE/A11] shows the composition of Cross Section A – A to include an 18.7m corridor with:

- 3m footway;
- 12.2m two-way tramway/carriageway;
- 3.5m footway.

3.3 I have also reviewed the other tramway cross sections shown on Cross Sections Sheet No. 6 [BEE/A11] and Cross Sections Sheet No. 7 [BEE/A11] at the following locations:

- B – B (between chainage 1,700m and 1,800m, New Canal Street/ Fazeley Street) comprising a 16.4m corridor including:
    - 3m footway;
    - 10.3m two-way tramway/carriageway;
    - 3.1m footway.
- C – C (between chainage 2,000m and 2,100m, Meriden Street North of Coventry Street) comprising a 13m corridor including:
    - 2.7m footway;
    - 8.6m two-way tramway/carriageway;
    - 1.7m footway.
- D – D (south of chainage 2,200m, Meriden Street/ B4100 Digbeth junction) comprising a 32.8m corridor including:
    - 4.1m footway;
    - 18.4m two-way tramway/carriageway at a bend;
    - 10.3m footway.

- E – E (south of chainage 2,200m, Meriden Street/ B4100 Digbeth junction) comprising a 49.08m corridor including:
    - 9.68m footway;
    - 9.4m carriageway;
    - 4m central reservation;
    - 10.7m tramway;
    - 3.1m central reservation;
    - 8.1m carriageway;
    - 4.1m footway.

3.4 My examination of cross sections A - A, B - B and C - C has shown that for a straight section of two-way single carriageway to accommodate trams and vehicles a width of 8.6m to 12.2m is considered acceptable by WMCA for the BEE, within an overall corridor cross section of 13m to 18.7m to accommodate all road users including pedestrians, cyclists and buses.

3.5 Figure 1 appended to my proof shows a corridor cross section of 18.7m based on the Works and Land Plans – Sheet No.1 [BEE/A11] drawing. When you examine Figure 1 it is clear the limit of deviation and of land to be acquired or used, the area highlighted blue, is much greater than needed to deliver the BEE tramway system.

4 OPTIMUM CORRIDOR WIDTH

4.1 Guidance on Tramways Railways Safety Publication Part 2, Office of Rail Regulation (November 2006) [BEE/C1] provides examples of established good practice acceptable to the H M Railway Inspectorate to provide an acceptable level of safety for the public (passengers and others), employees and contractors.

Tramway/Carriageway

4.2 The guidance states ‘where the tramway is in a highway shared with other road users, its design and construction should allow it to be used by other road users’. For the section of BEE passing alongside MG’s areas of interest the street running tram system must consider the needs of:

- tram vehicles;

- trams in movement, known as their Developed Kinematic Envelope (DKE);
- and other road users including road vehicles, buses, cyclists, pedestrians and passengers.

4.3 The guidance also states that “lanes used by trams and other large vehicles, such as buses, coaches and heavy goods vehicles, should normally be 3,650 mm wide for a two-lane carriageway. Lane widths that are shared between trams and other road vehicles will probably be dictated by the needs of the latter. A minimum lane width should be 3,250 mm unless agreed with the Highway Authority and the Inspectorate”.

4.4 Therefore, I would expect the tramway/carriageway width alongside MG’s area of interest to be greater than 7.3m (2x3650mm) since an allowance for DKE must be included. DKE is the lateral extent of the area that could potentially be occupied by a tram as it travels along the track. Any object that encroaches into this area could potentially be struck by the tram and therefore guidance documents provide information on safety clearances which must be provided from the DKE and adjacent objects such as footways and street furniture. The proposed cross sections provided in Cross Sections Sheet No. 6 and No. 7 [BEE/A11] take account of the effect of DKE.

4.5 From my full review of the Birmingham Eastside Extension, Plans and Sections document prepared by WMCA [BEE/A11] and Volume 2 Technical Appendices [BEE/A13/2], it is clear that the section at Meriden Street North of Coventry Street is also a shared track similar to the section of BEE alongside MG’s areas of interest. In my opinion, it is therefore reasonable to assume that the two-way carriageway/tramway width of 8.6m associated with Meriden Street North of Coventry Street could also apply to the section of BEE alongside MG’s areas of interest, as opposed to the overly engineered corridor which is presently proposed.

4.6 In addition to the tramway/carriageway the corridor by MG’s areas of interest must also provide for footway and a tramstop.

Footway

4.7 In addition to cyclists, motorised vehicles and trams, allowance must be made for pedestrians. Birmingham Eastside Extension ES Volume 2 Technical Appendix L2

Transport Assessment [BEE/A12/2] considers the pedestrian comfort level (PCL) to ensure that the proposed footway widths are sufficient to accommodate the expected level of pedestrian activity.

4.8 The calculations within the Transport Assessment (TA) use the guidance contained within 'Pedestrian Comfort Guidance for London' (Transport for London, 2010), which is appended to my proof. The TfL guidance states (on p.25) that "the recommended minimum footway width (total width) for a site with low flows is 2.9m. This is enough space for comfortable movement and a large piece of street furniture such as guard rail, cycle parking (parallel with the road), a bus flag for a low activity bus stop or a busy pedestrian crossing. In high street or tourist areas the total width can be reduced to 2.6m if there is no street furniture (except street lights) to allow space for people walking in couples or families and with prams etc. In other areas, low flow streets can be 2m wide if there is no street furniture. This total width is required for two users to pass comfortably and to meet DfT minimum standards".

4.9 Table 11.1 of the TA calculates that the proposed 3.0m wide Albert Street North footway and the 2.9m wide Albert Street South both result in A+ Pedestrian Comfort Levels (PCLs). A+ is the highest PCL indicating that the proposals are suitable for the pedestrian flows. The corridor alongside MG's areas of interest is defined as a low flow street so the minimum unobstructed width for pedestrians should generally be 2m. In my view, the footway allowed is significantly wider than would appear to be required in accordance with the guidance, and results in more land being identified for acquisition than is actually justified.

Tramstop

4.10 Guidance on Tramways Railways Safety Publication Part 2, Office of Rail Regulation (November 2006) [BEE/C1] states the needs of passengers, pedestrians and other road users should be reflected in the design of tramstops. It is my view that the island tramstop depicted on the application plans near MG's areas of interest is detrimental to local traffic and results in more land being identified for acquisition than is actually justified. In my opinion, the area would be better served by two roadside tramstops.

4.11 The provision of an island tramstop in this area impedes access to existing frontagers. For instance, The Transport Assessment [BEE/A12/2] says that “a U-turn facility is provided along the New Alignment to allow vehicles to access the NCP car park (as the right-turn is impeded by the location of the proposed tram stop)”.

4.12 The proposed U-turn facility is located at the junction of the realigned Albert Street with Dale End and Bull Street and allows vehicles to turn right from Albert Street westbound into Dale Street then left back onto Albert Street eastbound. As well as the NCP/ Ikea access, this provides a facility for traffic from St Michael’s Church car park to egress towards Moor Street Queensway as the proposed island tramstop impedes this movement.

4.13 Appendix D1 of the Update to the Transport Assessment [BEE/A13/4] provides information on the access proposals for the NCP car park entrances on Albert Street and Dale End, St Michaels Church car park and the service access for Travelodge and Tesco. According to this information the fact remains that the U-turn facility is only required if a central island tramstop is provided. It remains my opinion the area would be better served by roadside platforms and I am not aware from my review of the application documents of any justification for inclusion of an island tramstop.

4.14 In the event the central island tram platform was replaced with roadside platforms the U-turn facility is not required. By removing the U-turn facility more kerbside space is available to integrate the tramway enabling side platforms and on carriageway bus stops.

4.15 From measurement on site of the Stephenson Street eastbound Metro stop outside Birmingham New Street, the tramstop and accompanying footway width is effectively 5.1m (comprising 2.9m tram stop, 150mm channel and 2m footway). In my view, the same measurement would be appropriate to apply as a maximum width for roadside tramstops adjacent to the MG site.

Resulting Corridor Width

4.16 My review shows the optimum corridor width for a two-way single carriageway without tramstop is 14.5m, comprising footways of 3m and 2.9m together with a tramway/carriageway width of 8.6m.

4.17 With a tramstop, my review identifies a corridor width for a two-way single carriageway of 18.7m, allowing a 2.9m tram stop, 150mm channel and 2m footway on each side and a tramway/carriageway width of 8.6m.

4.18 Figure 2 appended to my proof shows the 14.5 m wide corridor and 18.7m wide tramstop zone based on the Works and Land Plans – Sheet No.1 [BEE/A11] drawing. When you examine Figure 2 it shows the limit of deviation and of land to be acquired or used, the area highlighted blue, is much greater than needed to deliver the BEE tramway system. The land proposed to be acquired therefore exceeds that reasonably required for the needs of the BEE.

5. THE NEED TO ATTACH CATENARY

5.1 Guidance on Tramways Railways Safety Publication Part 2, Office of Rail Regulation (November 2006) [BEE/C1] p.30 states structures supporting an overhead electric traction power supply system should be positioned so that they neither significantly obstruct the highway nor are unduly exposed to damage from an errant road vehicle or tram. The guidance goes on to state 'Electric traction supply poles with cantilever arms, or a system of span wires between traction poles' not just building attachments may be used to support overhead line equipment.

5.2 There are currently examples where Midland Metro uses poles rather than attachment to buildings so I consider it feasible to adopt a similar approach here. For instance, poles are used at different locations along Bull Street, located just to the north of this area, and along Stephenson Place on the approach to Birmingham New Street station.

5.3 The draft Order identifies plots 5 and 26 as being within the limits of 'Land with Rights to Attach Equipment to Buildings'. As such, if the Order is confirmed the promoter will be authorised to affix to any building located within this area at any time, any brackets,

cables, wires, insulators and other apparatus required in connection with the construction, operation or maintenance of the tramway; and any lamps, cameras, brackets, pipes, electric lines and other apparatus required for the provision of additional or substitute street lighting or closed circuit television in consequence of the construction, operation or maintenance of the tramway.

5.4 It is important to note Planning Direction Drawing Sheet No. 1 [BEE/A11] shows the corridor by MG's areas of interest is identified as an indicative location for OHLE poles, so I believe the Applicant recognises that it is possible to use poles and it is not essential to fix catenary to buildings in this location.

5.5 Guidance on Tramways Railways Safety Publication Part 2, Office of Rail Regulation (November 2006) [BEE/C1] Figure 6, p.20 provides minimum clearances to electric traction poles on a footway. Poles should be sited 450mm from the kerb and a further 300mm between kerb and the DKE.

5.6 The proposed footway widths for the BEE corridor in the vicinity of MG's areas of interest discussed in Section 4 (of at least 2.9m in width), associated with both the BEE and the optimum corridor width will provide sufficient width to accommodate pedestrian flows at points where poles would be sited in place of catenary fixed to buildings. Therefore, no catenary connection to plot 26 is required.

5.7 Directly outside of plot 5 the proposed footway is restricted to 2m. However, BEE proposes to retain the existing mandatory cycle lane between the proposed footway and tram DKE. In my view the 1.5m wide cycle lane is not essential to deliver the proposed tram route or to provide for all road users as cyclists could use the carriageway. If the cycle lane was removed a wider footway could be provided, meaning that poles could be used to support tram apparatus rather than building fixings.

6. CONCLUSIONS

6.1 This proof of evidence demonstrates that the current scheme proposals require more land to be acquired than is needed to deliver BEE. This document has reviewed cross

sections and examined integrating the system into the highway and identified that significantly more land than is required is shown as land which the applicant will be empowered to acquire permanently

6.2 The U-turn facility required as a result of the proposed island tramstop necessitates the use of a large area of land which is inefficient and reduces the area of usable kerbside for bus stops. In my view, and in the absence of any proper justification for its inclusion, the negatives outweigh any positives of introducing an island tramstop.

6.3 My assessment of the cross sections of other parts of the Metro have demonstrated that the optimum tramway width for BEE is 14.5m rising to 18.7m with roadside tramstops.

6.4 Therefore, the Order should be amended to reduce the land required permanently to construct BEE from the junction of Bull Street/ Dale End to Moor Street Queensway to reflect the optimum tramway width identified above, without an island tramstop and incorporating a reasonable limit of deviation consistent with such land requirements along other parts of the route. Any land required by the applicant for construction of the BEE beyond the optimum corridor and the reasonable limit of deviation need only be acquired on a temporary basis.

6.5 This proof of evidence also demonstrates that there is no need to attach equipment to the buildings comprising plots 5 and 26 as there is sufficient tramway corridor to accommodate poles in the footway. The Order should therefore also be amended to withdraw the rights to attach equipment to the building comprising plots 5 and 26.