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**BY EMAIL ONLY**

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**6<sup>th</sup> January 2023**

Dear Emyl

This letter provides a response and further Network Rail representations, regarding the application for directions for:

- A proposed track access contract between Network Rail Infrastructure Limited (Network Rail) and Grand Union Trains Limited (GUT) under section 17 of The Railways Act 1993 (The Act)
- A proposed second supplemental agreement to the track access contract between Network Rail Infrastructure Limited and First Trenitalia West Coast Limited (Avanti) under section 22A of The Act
- A proposed third supplemental agreement to the track access contract between Network Rail Infrastructure Limited and First Trenitalia(Avanti) under section 22A of The Act.

**Background and context:**

Network Rail has previously provided representations to the Office of Rail and Road (ORR) dated 20<sup>th</sup> May, 27<sup>th</sup> May, 15<sup>th</sup> July, 17<sup>th</sup> August and 14<sup>th</sup> November and 28<sup>th</sup> November 2022.

There have been some changes to the applications submitted by the Operators, such as revisions to start and expiry dates and rolling stock however the detail of the access rights in terms of quantum of access rights and routing remains the same. Network Rail refers the ORR to these previous submissions on Network Rail's position and further representations in this letter, to inform the ORR's view on the updated applications.

Network Rail submitted a detailed and comprehensive range of studies to the ORR assess the previous iterations of these track access applications. The following studies have already been completed and informed Network Rail's responses to the previous track access applications:

- Bushey PSU Neutral Section – Traction Power Modelling Report
- Dec '22 Traction Power Modelling results
- Rolling Programme of Decarbonisation – Scotland West & South '22
- Rolling Programme of Decarbonisation – Scotland South '22
- Tracsis NW & C Rail Sys Performance Modelling (plus data)
- Tracsis – West Coast Main Line (WCML) South Operational Modelling for IPG Dec '22. Platform 16 stress tests
- AWC Class 800 technical values plus TSR information
- London Euston HS2 on Network Works Stage B1 14 Platform Capacity Study plus appendices
- Simulation Modelling for Dec '22 WCML ESG

### **Overall summary:**

Network Rail's conclusion from the analysis undertaken is the additional services included within the access rights applications should not operate before May 2025. By that date, it is expected 16 platforms will once again be operational at London Euston and the Bushey power supply programme will be complete.

The additional services included within the access rights applications would increase the quantum of services across the day on the Fast Lines of the West Coast Main Line (WCML) to unprecedented levels. Network Rail will support the operation of the additional services from May 2025 subject to a cross-industry WCML Performance Partnership, with committed actions for affected operators and Network Rail. Acknowledging the passenger benefits associated with the additional services, it is imperative the industry delivers improved performance alongside the increased connectivity. This is further explored in the Performance Analysis section. Other elements of our position specific to each operator are set out in the next two sections.

### **Network Rail's position on GUT application for a new Track Access Contract:**

Network Rail is willing to support GUT's application for 4 firm rights Monday to Saturday and 3 firm rights Sunday, in each direction, between London Euston and Stirling but only on the following basis:

- for the duration between May 2025 and December 2030 due to the interaction with HS2
- subject to rolling stock being able to meet or outperform the timings developed through the Event Steering Group(ESG).

This follows the completion of performance analysis of perturbation scenarios for Euston station, together with some further power modelling analysis. This work was referenced in the previous response to the ORR dated 15 July 2022 where Network Rail notified the ORR that it was not supportive of the GUT application for the proposed London Euston to Stirling services.

Network Rail's position on rolling stock, investment and expiry date detailed within the response to the ORR dated 28 November 2022 remains the same. Network Rail would also like to draw the ORR's attention to 'The Performance Challenge' section included later in this letter.

In Network Rail's response dated 28 November 2022 Network Rail previously stated its reasoning for including an expiry of December 2030 as this application will interact with the DfT's proposals, developed with West Coast Partnership Development (WCPD), for HS2 operation.

A captive HS2 service between Old Oak Common and Curzon Street (Birmingham) is planned to commence in June 2030. The current plan is that HS2 services will then begin running on the existing WCML - to a combination of Manchester, Glasgow and Liverpool - from December 2030, joining the WCML at Handsacre Junction (near Lichfield). Some existing services will be withdrawn at this point. As additional sections of the HS2 route are commissioned throughout the early 2030s, more HS2 services will be introduced, culminating in Phase 2a completion by the mid-2030s. An indicative TSS for this end-state has been endorsed by DfT and the industry, but interim solutions between 2030 and the end state are yet to be finalised, decisions about which will be based on ongoing work between HS2 Ltd and WCPD.

GUT has not specified its intended rolling stock within its recent application. Network Rail understands the reasoning why and has previously outlined its position on rolling stock in the response to the ORR dated 28 November 2022. The position on this remains the same, and support for this application is provided on the basis that the rolling stock will be required to meet or outperform the performance of the rolling stock previously modelled within the Event Steering Group which was a class 91 with 7 Mk4 carriages and a DVT trailer using timing load 11091E330. Network Rail has received confirmation from GUT dated 30 November 2022 confirming "that the trains, once chosen, will have performance characteristics that outperform the rolling stock used to develop the current train paths".

Network Rail is supportive of GUT's intention to secure new rolling stock, we recognise this is a significant investment for a new operator to make however it is preferable from both a passenger satisfaction and performance perspective. Once new rolling stock has undergone an initial "bedding in" period it is more reliable than rolling stock with a high average age. For example, for the Class 91 LNER fleet, the moving annual average(MAA) for miles per technical incident as at Period 08 FY22/23 was 8793, compared to their class 800 fleet with an MAA of 32,447, and class 801 with an average of 51,930.

Network Rail's position on investment considerations as part of the GUT application remains the same as the response to the ORR dated 28 November 2022. We stated we would need to understand the specific investments being proposed by GUT, the timescales involved and funding requirements before we were able to comment further. There has been no further information provided so Network Rail is unable to provide additional comment to the position stated in the response dated 28 November 2022. Network Rail is disappointed that the investment proposal relates only to rolling stock and stations and does not include a detailed investment plan in the network. Network Rail would expect to see the inclusion of Investment Conditions accompanying an Open Access Application for longer than 10 years.

### **Network Rail's position on Avanti's 2nd and 3rd supplemental agreement application:**

In addition to Network Rail's response to the ORR dated 15 July 2022 supporting the access rights which underpinned and aligned to the December'22 timetable, as formally offered on the 1 July 2022, following the completion of performance analysis of perturbation scenarios for Euston station and further power modelling analysis, Network Rail is willing to support:

- the 2<sup>nd</sup> supplemental agreement for additional London Euston – Liverpool services(both directions) from May'25 on the condition services are restricted to operating in diesel only between Crewe and Liverpool until the conversion of Crewe-Weaver to an Autotransformer system has taken place.
- in the 3<sup>rd</sup> supplemental agreement one additional right between London Euston and Blackpool North (both directions) operating SX and SO, from May'25.
- in the 3<sup>rd</sup> supplemental agreement amendments to two rights between London Euston and Blackpool North, operating SX and SO, amended to be London Euston to Glasgow Central from Dec'23.
- in the 3<sup>rd</sup> supplemental agreement amendments to two rights between Blackpool North and London Euston, operating SX and SO, to be amended to be Glasgow Central to London Euston from Dec'23.

Network Rail is supportive of the application for additional access rights from May'25 as the performance analysis of perturbation scenarios concluded that the May'25 scenario with 16 platforms including all additional services was easy to operate, and a platform would be available for 20 minutes or more 100 % of the time. This provides a level of resilience and robustness which made it easier to recover the timetable than with fewer platforms available, however this is only one aspect of whole railway performance the WCML partnership will need to address. Again, Network Rail would also like to draw the ORR's attention to 'the Performance Challenge' section later in this letter.

As well as the performance and power supply considerations within this letter there are other reasons why we would not support the additional access rights before May'25. The ability to accommodate the additional London Euston to Liverpool services is dependent on completion of the linespeed improvement programme -as previously advised to the ORR, there is no agreed plan for implementation and access will need to be negotiated. The ability to run the additional services is also dependent on the successful introduction of new rolling stock.

### **Traction Power Supply:**

As part of the process of developing a traction power supply strategy, traction power supply modelling has been undertaken for NW&C Region over the last six months. This has been more detailed and comprehensive than previous modelling (which hitherto has focused on answering bespoke specific questions) and has yielded increased granularity of the traction power supply challenges. The overall picture is of core sections of the NW&C network being very close to, at or exceeding traction power capability limits. These include:

- Acton Lane feeding area
- Washwood Heath / Willenhall feeding area
- Crewe / Weaver feeding area
- Catterall feeding area
- Harker feeding area

In relation to the track access applications which are the subject of this letter:

- the Acton Lane area is covered by the Bushey power supply project
- Washwood Heath / Willenhall are not relevant to these applications
- further specific modelling of the track access applications covered the Crewe – Weaver, Catterall and Harker areas
- and a further issue was identified in Scotland at Gowkthrapple.

Network Rail previously advised of power supply constraints at Bushey and Gowkthrapple in representations dated 20 and 27 May 2022 with updated representations on the 15 July 2022. Network Rail advised that the ability to accommodate additional services is dependent on the completion of Bushey Feeder Station Power Supply Upgrade, and a new feeder location at Currie.

### **Bushey feeder station power supply upgrade:**

The current programme shows P80 entry into service of 2<sup>nd</sup> April 2024, however, the Quantitative Schedule Risk Assessment (QRSAs) was not based on the contractor programme. The QRSAs will be re-run in January 2023. On this basis, it is prudent to plan on the basis of the December 2024 timetable change as the earliest opportunity to introduce additional services. Previous modelling showed operation of the full Dec'22 ESG timetable before the upgrade would exceed power capacity limits and would be subject to frequent power supply failures causing service diversions, delays and cancellations in the short term and further disruption through work to repair or replace damaged equipment.

### **Crewe – Carlisle area:**

Previous analysis undertaken by the Electrification & Plant (E&P team) in June 2022 looked at the implications of accommodating additional services alongside the Dec '22 timetable and concluded that there appears to be only very marginal capacity in normal feeding, with particular risks arising around the Crewe area. The analysis is highly sensitive to both the scheduling of services within the timetable and the volumes of electric freight running in the model. Therefore, further analysis has been undertaken using updated timetable and rolling stock information, with updates to reflect changes to Avanti's rolling stock deployment and further refinement of electric freight assumptions.

The analysis found that on WCML(N) geographical area there are no noted non-compliances (to EN50388, EN50163 and ENA Engineering Recommendations P24) during the normal, optimal running of the mid-week timetable that coincide with the GUT services to Stirling.

However, there are a significant number of low voltage non-compliances between Crewe and Weaver Junction, which coincide with the Avanti services serving additional Euston – Liverpool route (with the WMT Class 350 services from Birmingham to Liverpool also in section).

Multiple instances of voltages dropping below 19kV can be observed, Non-compliance where the voltages dropped below 17.5kv instantaneously, or below 19kv for more than 2 minutes, could occur in both normal and first outage scenarios (N and N-1) with the service patterns modelled. Non-compliant voltages are likely to reduce performance of all trains in section, reducing acceleration and

potentially leading to longer SRTs. The worst low voltages are at a level where train trips become likely.

Given the prevalence of non-compliant low voltages at Crewe it is recommended that any additional services between London Euston and Liverpool are not permitted to run using electric traction until the conversion of Crewe-Weaver to an Auto transformer system has taken place.

Auto transformer feeding for the ~17miles of route between Crewe-Weaver will futureproof the capability of the electrical infrastructure for that section of track. It is currently in design and subject to funding and commitment. The delivery programme will be access dependent and it is expected to take circa 3 years. Design for the Auto transformer Crewe-Weaver is due for completion July 2023. Once this has been completed funding can be secured, and a delivery programme including access requirements compiled.

### **Gowkthrapple:**

Issues with the power supply at Gowkthrapple are now actively being addressed via the planned commissioning of a new feeder location at Currie, which will relieve the pressure on the Gowkthrapple feeder area. Once the Currie feeder station is commissioned (expected delivery during 2023), the concern for the Gowkthrapple area will be mitigated.

### **West Midland Trains 10 car operation of class 730 units:**

Network Rail is not supportive of the Avanti and GUT applications before May'25 due to the reduced platform availability and performance impact at London Euston summarised in the performance analysis section of this letter. Network Rail is also mindful of West Midland Trains' aspirations to run 10 car electric class 730s into Euston - there is no compliant timetable plan in place to support 10 car class 730 operation when Euston is limited to 15 platform. The exact date for the introduction of these services is not yet known and there is wider uncertainty around this decision (which will impact the timetable plan and platforming). WMT has confirmed they will not look to operate them before May'24.

### **Performance Analysis:**

Following our representations dated 15 July 2022 and discussions with the ORR on 10 August 2022 Network Rail committed to undertaking performance analysis of Euston concentrating on perturbation and service recovery. The analysis included a signalling simulation element and analysis of spare platform capacity. This has now been completed and the full report can be found in Appendix A – Timetable Performance Assessment Technical Note.

### **Signalling Simulation:**

As part of the performance analysis for the signalling simulation six Euston platforming timetable scenarios were analysed to assess how each of them will perform during times of perturbation. Operation of the timetable during perturbation was tested using a signalling simulator. Late arrival

times were duplicated across the timetable scenarios to replicate a day when WCML performance was below average. Then some common causes of delay, such as late arriving traincrew, or issues with the rolling stock, which may disrupt departures were tested.

Although the simulation represented a below average performance day, line blocks and infrastructure failures were not modelled on the advice of SMEs as these events would cause significant disruption at Euston in scenarios with or without reduced platforms, resulting in either cancellations of services or some of these being cancelled and turned back before they reach Euston, probably at Rugby or Milton Keynes Central.

This is the first time such a methodology has been used for performance analysis. Due to the activity requiring significant resource, time constraints and availability of both signallers and the simulator meant each timetable scenario could only be simulated once.

The simulation concluded the timetables simulated were structurally sound and were able to recover well when a range of perturbation scenarios (low – high delay added at entry) were added. As expected, the simulation scenarios based on 14 platforms (Dec '23) performed worse and took longer to recover than those with more platforms and/or fewer services. This is mainly due to signallers having fewer options for re-platforming when a service is delayed and occupying a platform for longer than planned.

The simulation conducted on the May '24 scenario, with 15 platforms available and both the additional Avanti Liverpool services and GUT Stirling services, came closest to the timetable failing to recover. The simulation was two minutes away from trains queuing on the approach lines and the signaller reported that the timetable was not resilient or recoverable with the simulation not having any spare capacity, meaning trains were only able to be platformed on a “one-in, one-out” basis, further describing the situation as “nearly end of story”.

Whilst all simulations included an incident on the Coventry corridor that caused significant delays to services from the West Midlands, and all simulations included a failed Holyhead train that departed sixty minutes late to the depot, this was the only simulation where incoming trains could be seen slowing toward a red signal as the signaller waited for a departing service to clear the point work and a platform to become available. The signaller reported it was “one in, one out”, only able to platform an approaching service once another had departed. If this had continued, it is likely trains would have queued at red signals on the up fast. The late arrival of units and crew might then have led to late departures, further blocking platforms. The situation remained the case for several minutes before the Holyhead train was allowed to move, at the time predetermined for that scenario.

Anything that causes trains to remain in the station after their booked departure is a risk and if such events coincide the station would reach full capacity, with train crew delayed on incoming services waiting for a platform, preventing departures of trains already in the station.

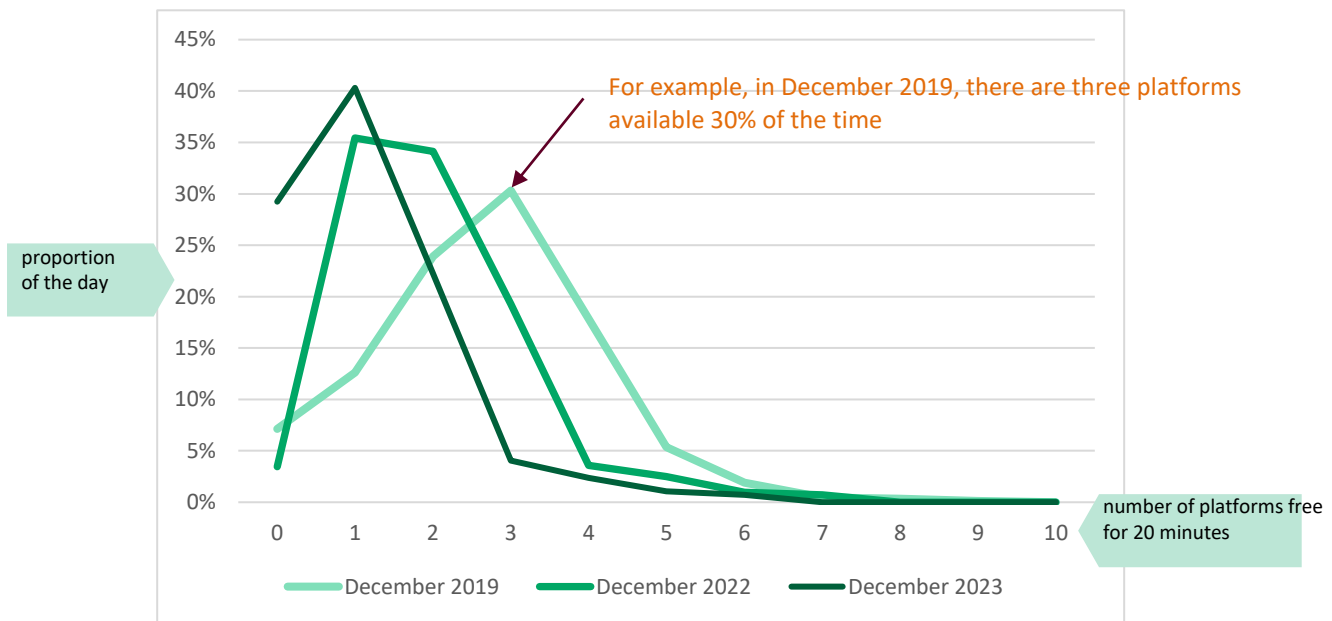
### **Platform Utilisation Analysis:**

A range of analysis on platform utilisation was undertaken, full details of which can be found in Appendix A. Analysis of the percentage of time a platform was available for 20 minutes or more found that for both scenarios assessed using the Dec'23 timetable with 14 platforms available, a platform was available for 20 minutes or more only 71 % of the time. This was a sharp decline from the May'23 scenario of the December'22 timetable using 15 platforms, which had a platform

available for 20 minutes or more for 97 % of the time. For a May’25 scenario with 16 platforms available, with both the additional Avanti Liverpool-Euston services and GUT Euston – Stirling services, a platform was available for 20 minutes or more for 100 % of the time.

20 minutes was used as the criteria for which a platform was available due to the minimum time required for passengers to disembark a train, passengers for the next service to embark and the service to be dispatched. It was agreed by the SME’s involved this was the best working assumption however a typical Avanti long distance service would typically dwell for longer than twenty minutes and have a higher minimum turnaround time stated within the Train Planning Rules.

The graph below, also found in Appendix A, page 17, shows the proportion of the time (as a percentage) that one, two, three and up to ten platforms are available to signallers to deal with disruption.



The three lines show how the availability of platform space is declining. The December 2019 line shows there are more unused platforms for more of the time; December 2022 shows fewer unused platforms and December 2023, with 14 platforms available has the least – it almost never has three platforms available. The increase in the proportion of the day that there are no platforms free for 20 minutes – from 7 % in 2029 to 29 % in December 2023 is a significant reduction in timetable resilience.

**The performance challenge:**

These proposals will see a quantum of fast line services that has not previously been operated reliably on the WCML .As we have previously explained, traditional timetable modelling has the drawback of comparing two timetables on days with good to average performance. It has limitations in modelling the impact of disruption. To try to overcome this we have trialed a different approach, simulating the operation of the timetable and applying delays. Whilst this is a positive step forward and a valued piece of work it still has limitations. The reality of operating the railway will always be different from theoretical modelling which struggles to comprehensively portray all operational requirements and decisions on the day. Further, the financial constraints which the railway now faces are not only leading to uncertainty around key longer-term decisions but will inevitably place further pressure on day-to-day operational delivery.



Timetable modelling undertaken for the ESG, confirmed by the signalling simulation described above, implies the structure of the December 2022 timetable is improved compared to the December 2019 timetable. The modelling forecasts improved performance on a good day. However, we should acknowledge the impact on WCML Fast Lines quantum of the full ESG timetable. Even with a new timetable structure, the higher density of traffic will be reflected in the impact on the day of operational incidents. Examples include the need to swap train sets booked to operate services due to displacement or train faults (for example, Avanti on average swaps units for 1 in 5 services), and the requirement to implement temporary speed restrictions as part of operational mitigations. Our expectation is the increase in quantum will result in upward pressure on total delay minutes and reactionary delay in particular.

Temporary Speed Restrictions are often necessary to ensure the safe running of the railway between the identification of a defect and applying a repair. For example a current temporary speed restriction between Primrose Hill Tunnel and Queen’s Park on the down slow, reducing the normal passenger speed from 105mph to 50 mph for a one-mile stretch of track has a 71 second impact on each Avanti Service and 69 second impact on each West Midland Trains Service. It has an 8 % impact on T-3 for both operators.

The reality of operating the railway is that incidents unfortunately take place and impact the operation of the train service. The initial service which experiences the delay will, in most cases, cause knock-on delay to other services. The graph below details the amount of reactionary delay for each minute of prime delay.



The above helps demonstrate how reactionary delay rises in correlation to the number of services running. Reactionary delay increased after the significant changes introduced as part of the May’19 timetable change which took place in Period 02 FY19/20. Reactionary delay greatly reduced in Period 1 20/21 when Covid saw the timetable greatly reduced from 23 March 2020 as a response to the introduction of Covid restrictions. Since then, the trend has seen reactionary delay increasing again as the quantum of services has increased.

It will be vital for the industry to commit to work together to mitigate the impact of the additional quantum of services.

### **WCML Performance Partnership:**

Network Rail's key objective is to deliver the passenger benefits of connectivity and reliability associated with the additional services without increasing overall delay.

In order to achieve this, and enable Network Rail's support for the additional services, Network Rail's proposal is the establishment of a full WCML performance partnership, to involve all fast Line operators and Network Rail. This should entail the development and agreement of a resource plan, to ensure that the increased fast line quantum can be implemented without detriment to other operators or reactionary delays. We expect there to be a particular focus on incident / service recovery and the causes of disruptive events. Potential scope includes activities such as: measures to deliver adherence to turnround times; traincrew and catering resourcing; the access regime for maintenance; measures to tackle trespass / fatalities; driving practices; linespeed coasting. Reliable performance requires clear and unequivocal commitment by all parties to an agreed performance improvement programme. It is likely mitigations will be identified with a resource requirement for operators contracted to the Department for Transport; the approval of the Department may be required to enable their delivery.

Network Rail, will commence the timetable, performance and safety risk assurance process at the earliest opportunity in order to effectively manage the risks highlighted within the letter, assess progress and secure delivery of a reliable train service.

### **Conclusion:**

Network Rail acknowledges the demand for additional WCML long distance services. It established the Industry Plan Group in 2020 to explore whether a restructured Fast Line timetable could release additional capacity. Network Rail then led the WCML ESG with two main objectives: to provide additional fast line paths and improve overall performance. We believe the full ESG timetable has the potential to be successful on both counts. However, since the ESG (and Industry Planning Group) process commenced in May 2020, more information about the platform reductions at Euston and power supply constraints throughout the WCML have become available. Current plans will see most, but not all, of these constraints resolved by May 2025. Consequently, Network Rail concludes it is not supportive of the Avanti access rights applications for additional services before May 2025.

In coming to a conclusion regarding these specific track access applications, Network Rail has sought to strike a balance between the aspirations for growth and overall train performance.

At this time Network Rail is supportive of the access right applications for:

- Grand Union Trains proposed services between London Euston and Stirling with a start date of May'25 and expiry date of December 2030 on the basis any rolling stock will have performance characteristics that meet or outperform the rolling stock used to develop the current train paths.
- Avanti 2<sup>nd</sup> supplemental agreement with a start date of May'25 and the additional London – Liverpool services limited to diesel operation between Crewe and Liverpool.
- Avanti 3<sup>rd</sup> supplemental agreement additional one access right between London Euston and Blackpool (both directions) with a start date of May'25.

- Avanti 3<sup>rd</sup> supplemental agreement amendments to existing London Euston to Blackpool right to London Euston to Glasgow Central (in both direction)

Network Rail's support is based on both parties, and the wider industry working with us in order to mitigate the impact of the additional services on the WCML performance before they can be accommodated within the timetable.

In the case of the GUT proposal the application contains a lack of operational details to allow a full assessment of the proposals. Network Rail therefore wishes to work with GUT as their plans develop and they prepare to mobilise the service in order to fully address operational matters.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'D Golding', enclosed in a thin black rectangular border.

David Golding  
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