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Email:

Network Rail Further Representations to the ORR with regards to Grand Union Trains Limited (Grand Union) and First Trenitalia West Coast Limited (Avanti West Coast) access applications on the WCML

15 July 2022

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Introduction

This letter is in response to the ORR's letter of 24th June 2022, regarding the outstanding applications submitted by Grand Union Trains Limited (Grand Union) and First Trenitalia West Coast Limited (Avanti West Coast) to ORR in 2019. This letter seeks to address the specific concerns raised by the ORR, and to provide further updates in terms of Network Rail's support for the two applications. These updates are in light of the recent progress made with the power supply modelling work, and progress with the timetable validation process for December 2022. As a result, Network Rail is now in a position to confirm which rights it supports for the December 2022 timetable.

Avanti West Coast application

Is Network Rail able to support the Avanti West Coast application, or a subset of the application? i. If Network Rail cannot support the application, or parts of it, please explain with evidence all areas it cannot support.

Network Rail is willing to support the Avanti West Coast access rights which underpin and align to the December 2022 timetable, as formally offered by Network Rail on the 1st July 2022. The services included in Network Rail's December 2022 offer reflect the services that Network Rail expects will operate during the December 2022 timetable.

At this time, Network Rail is not supportive of any additional rights for Avanti West Coast over and above the aforementioned rights required for the December 2022 timetable. This includes the rights for the additional off-peak Euston – Liverpool services.

ii. Please set out which of the rights can and cannot be supported, clearly identifying which are existing rights, amended rights or additional rights.

Please see Appendix 2 for full details of Schedule 5 tables.

iii. If Network Rail does not support Avanti West Coast's additional Liverpool services, planned to be phased in from December 2023, is there a date from which Network Rail can support them? If not, why not?

Network Rail cannot yet commit to a date from which we would support access rights for these specific services (nor GUT's request for rights to run from Euston to Stirling). For the period from December 2023 to May 2024, Euston Station will be operating with 14 platform capacity due to facilitate the planned HS2 On Network Works delivery programme. Whilst some preliminary timetable work has been conducted to identify the impact on service operation whilst the capacity at Euston Station is reduced to 14 platforms, this didn't include any modelling of moderate or heavy perturbation scenarios when platform capacity is at a premium. For this reason, Network Rail has not yet been able to fully conclude the number of services that the station may be able to reliably accommodate during this timetable period, although it will (at the very least) require a temporary reduction in services compared to December 2022. Additionally, the ability to reliably accommodate the additional Euston-Liverpool services on the WCML South also relies on the commissioning of the Bushey Power Supply Upgrade ('PSU') scheme. Whilst a notional high-level delivery date of Spring

2024 is expected for this scheme, a detailed delivery programme still needs to be developed and confirmed which we expect to have in September.

The capacity constraints at Euston Station, and power supply constraints at Bushey, mean that Network Rail is unlikely to be able to support access rights for additional services until at least May 2024, which is the current expected date for the completion of the Bushey PSU project, and by which time Euston Station is expected to return to 15 platform operation. Furthermore, our position is also likely to be revised again once Euston Station returns to 16 platform operation, which is currently planned for May 2025.

In summary, our future position on supporting these services relies on;

- Having a robust programme for the successful commissioning of the Bushey PSU project – **this is needed to inform our position on access rights post May 2024**.
- Further performance analysis for the WCML, to model medium and heavy perturbation scenarios and 15 platform operation at Euston – **this is needed to inform our position on access rights post May 2024**.
- Further performance analysis for the WCML, to model medium and heavy perturbation scenarios and 16 platform operation at Euston – **this is needed to inform our position on access rights post May 2025**
- Review of actual timetable performance once in operation.

Our position on whether we will be able to support the sale of access rights for additional services from May 2024, and again from May 2025, will be updated once the outputs from these workstreams is produced. The performance analysis is expected to be produced in December 2022.

iv. The representations state Network Rail could only support a contract expiry date of December 2030. Please explain the rationale for this position. Our understanding is that Avanti West Coast's National Rail Contract will last until 2032.

Network Rail will only support an application which aligns with any proposed expiry of National Rail Contract (NRC) or December 2030 (whichever is the sooner date). December 2030 reflects our current expectation for the start of HS2 Configuration State D services (Configuration State D represents the first stage when HS2 services will integrate with the conventional network at Handsacre Jn). A detailed capacity modelling exercise has not yet taken place to determine the impact of running HS2 services onto the WCML North, so we cannot yet commit to selling any access rights which may potentially restrict our flexibility to optimise the timetable when integrating HS2 and conventional services.

This is in line with the direction from the ORR as published on their website to ensure “facilitating the construction of phase one of High Speed 2 and an expectation of Virgin (now Avanti) being given a TAC to only 2026 or beyond”.

[ORR's Statement on Track access issues arising from High Speed 2](#)

Performance

**Network Rail has expressed performance concerns with both applications:
i. Please set out modelled performance impacts of the proposed services, in T-3 terms. Please provide this per path and confirm the applications have been modelled separately; and**

The applications have been modelled separately - they are referred to as 'Sensitivity Test 1' (no GUT) and 'Sensitivity Test 2' (no 2nd Avanti Liverpool) in the Tracsis Rail Consultancy Report, which was commissioned to support the December 2022 timetable remodelling (a copy of the report is attached as Appendix 3). See Table 1 below.

Variant	Base	Main Option	Sensitivity Test 1	Sensitivity Test 2
Description	Dec 19 Timetable	Full Dec 22 variant	Main Option with only GUT removed	Main Option with only second Avanti to Liverpool removed

Table 1. Performance modelling sensitivity scenarios, taken from Tracsis Rail Consultancy Report

As requested, more granular results at T-3 are attached and can be used albeit with the following caveats:

- The more granular data is likely to present greater risk in terms of modelling accuracy – it is more difficult to ensure that modelling errors, inconsistencies and outliers do not have an important influence on results when making an assessment at this more granular level of detail. We would advise only disaggregating to the level of service group, rather than individual train path.
- The figures provided will almost certainly present an over optimistic conclusion if taken as representative of T-3 figures across the timetable. Additionally, the difference between historic data and modelled data will not be consistent throughout the model. As stated previously the difference between base and option(s) is where the most value is added.

Notes on simulation software – RailSys:

- The performance assessment has been undertaken in RailSys. This simulation software does not fully replicate system capability i.e., it does not model specific asset failures, extreme events, all aspects of service recovery etc. Therefore, it will not predict accurately (to the nearest % point) system performance of an entire timetable with all the intricacies of everyday operation.
- The modelling does provide a difference between base and option(s) that can be used qualitatively to understand differences between base and option timetables and the trend within these to support decision making. The modelling has not been undertaken to predict accurate levels of performance (T-3 or other metrics). The modelling is indicative.
- Timetables are taken and simulations run against a level of delay that is appropriate to flush out differences between timetables and to understand key performance risks and trends. The delay that has been inputted into the RailSys Simulation model in this instance wasn't calibrated to the level of individual paths, rather it is a generalised delay figure that is designed to loosely correlate to historic delay. The

headline figures produced would only be representative at a service group level rather than for individual trains.

Further notes regarding these simulation results:

- It is important to note that RailSys Performance Simulation modelling is for a good day of operability only – the headline figures for On-time and T-3 should not be taken as performance that is expected to be achieved over the full course of a timetable. During Covid, historic T-3 was rarely seen at the level modelled in the Performance Simulation Modelling, despite lower train service levels and much lower footfall than can be expected in December 2022.

ii. Please explain the choice of base timetable for the performance comparisons.

In terms of the choice of base timetable to compare against, a decision had to be made in summer 2021 when the modelling work was commissioned. At that time, the only timetable available that was not significantly affected by Covid-19 and had a reasonable set of historic data available was the December 2019 timetable, hence the decision to use this as the baseline. During the modelling process, a further request was made to assess the December 2022 timetable performance against May 2021 (which had a much lower capacity utilisation and higher performance due to Covid-19 emergency timetables being in place). However given the fact that May 2021 was only ever likely to be a short-term emergency measure to reflect the significant reduction in passenger numbers travelling, it would have been inappropriate to use it as a valid baseline for comparison against December 2022.

Fast Line Quantum Limit

Network Rail has said it proposes to implement a “quantum limit” of 12 or 13 fast line London Euston departures per hour from December 2022. It has used different terminology in communications for the “limit”, also using a “cap”, “phased reintroduction” or an “introduction of service”. This inconsistency can lead to confusion. For clarity, we refer to it as a “limit”. Please can Network Rail set out:

i. How it arrived at this “limit” proposal, both in terms of evidence considered and governance process;

Traction power analysis was undertaken for the Acton Lane feeder station area (Euston to Wembley North on the WCML) to support the NW&C December 2022 ESG, with analysis assessed against the full Concept Train Plan. This analysis predicted an increased power demand as a direct result of running more trains on the WCML and the introduction of new rolling stock. Importantly, this was in the context of a power supply system that was already failing in December 2019. The analysis demonstrated that if the full December 2022 train service was to be introduced in entirety, with the proposed rolling stock assumptions, then the power supply overload frequency could increase from an average of 6 outages per year up to potentially 30 outages per year, resulting in an unacceptable risk to service delivery.

As part of the ESG process, Network Rail discussed its proposed way forward for managing the supply challenges, which consisted of three sequential options - 1) Validating the inputs to analysis to ensure accuracy, 2) Implementing a reactionary 'on the day' GSMR-activated

power mitigation system in the event of outages, and finally - if Options 1 and 2 failed to fully mitigate the risk, then 3) Restricting the number of services to operate in the timetable until the constraints could be resolved. We accept that whilst the possibility of needing to restrict the number of services operating was discussed at ESG, the specific impact (in terms of the necessary 'limit' in quantum) wasn't defined – primarily due to the still maturing assumptions in the power supply analysis, in particular the assumptions regarding volumes of electric freight traction on the WCML, so analysis work was still ongoing at the point whereby the ESG drew to a close back in March.

Alongside this work, the Tracsis performance modelling for the December 2022 Concept Train Plan (geographical model was for WCML, Euston to Preston including Liverpool and Birmingham New Street) showed a marginal improvement on Dec'19 on a good day. However there were some specific challenges identified with the WCML South in the Up direction, for which the analysis suggested a reduction in On-Time performance for Avanti Up Euston Arrivals by 5.2%. Without the additional services, performance is modelled to be better than Dec'19 overall out of the key operators including Avanti Up Euston Arrivals. This modelling only compared performance to the December 2019 timetable for a good day. Whilst the modelling was also extremely detailed, as previously mentioned it did have limitations in the fact that it only analysed performance on a 'good day' and did not include a quantified assessment of network performance under significant disruption. This context needed to be considered when evaluating the performance risks from the new timetable.

The Bushey PSU scheme will resolve the Acton Lane resilience problem, however the benefits from this enhancement won't be delivered until Spring 2024 at the earliest. For the interim period we needed to find a solution to minimise the risk to service delivery. Power supply modelling is complex, and depends on a number of factors such as rolling stock type, type of day, and even direction of service. In practice, applying mitigations could involve introducing restrictions on certain types of rolling stock, or limiting services to certain length formations, however we sought to translate a complex problem into a set of simple parameters that could be applied to the planning process, to ensure that we can manage the risk for the interim period until the Bushey PSU scheme is completed. The strategy was to apply a consistent limit to the number of electric services operating to a level that would not exacerbate the power supply problems already experienced, with further services introduced at later dates once the power supply issues were resolved and a full evaluation of performance could be observed. Sensitivity tests completed for the power supply analysis, which involved limiting the Fast Line quantum to 12/13tph, showed that this reduces the power supply risks to a level no worse than in December 2019. These conclusions were presented to our NW&C Exec for consideration and approval, and subsequently articulated to external stakeholders at the December 2022 Regional Readiness forum.

A communication was sent out to all stakeholders on the 8th June 2022 with regards to the proposed quantum limit (see Appendix 1 attached). The offered December 2022 timetable, by Capacity Planning, is compliant across the day with the principles that were set out in this communication.

ii. What periods of the day it covers;

The quantum limit will apply to all hours of the day.

iii. What it will be considering during its review process, what information would lead to a change to the limit prior to the power traction issue being resolved, a specific date when the first review will take place, and an explanation why the reviews will take place every 12 months, rather than a shorter/more flexible period; and

Network Rail does not consider that a change to the quantum limit before May 2024 would be possible due to the power supply constraints at Bushey, and the reduced platform capacity at Euston Station with the station being further reduced to 14 platform operation.

Nonetheless we do accept that there would need to be some flexibility in our position, and a need for a rolling process to monitor if and when there are any changes to underlying assumptions (for example changes to the Bushey PSU project timescales). So following the initial timetable introduction in December 2022, and any post-Christmas and New Year amendments, we will undertake a first review by February 9th 2023 ahead of the December 2023 Priority Date on March 3rd. This review will be informed by an analysis of:

- How the timetable operate in reality, showcasing Time-3 and Time-15 results since introduction
- Outputs from WCML performance analysis – for 15 and 16 platform options at Euston Station with medium / heavy perturbation scenarios
- Updates from the Bushey PSU project delivery timescales

Further review points would be annually at a minimum, but we do accept that there would need to be some flexibility in this approach.

iv. A specific planned date for the implementation of the Bushey feeder upgrade, rather than it possibly being delivered in “Spring 2024”.

It is not possible to provide a specific committed date for implementation at this stage. Although the funding has been approved by DfT for this project, a delivery programme still needs to be worked up and agreed between Network Rail, affected WCML operators and the supplier. We expect to have clarity on expected delivery in September.

Power Supply

Network Rail has highlighted power supply concerns at the Gowkthrapple feeder station in Scotland. It is not clear from Network Rail’s representations whether this issue is serious enough on its own to refuse access; i. Please can Network Rail set out when it identified this as an issue, whether this issue can be mitigated and, if so, what those mitigations are;

Monitoring of power supply and the level of trips being seen has been a concern for the Gowkthrapple area for some years; further modelling undertaken in June 2022 with known electric service enhancements envisaged for December 2022 (and beyond) has enabled Network Rail Scotland to update its position.

In terms of mitigations, 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 in Spring '23), the concern for the Gowkthrapple area will be mitigated.

ii. Please set out how this impacts each application and the timeline for completely resolving any power traction issues in Scotland;

Given the update regarding the proposed Currie feeder upgrade, and the fact that GUT services planned to run to/from Scotland are not supported by Network Rail for other reasons in the short term, the Gowkthrapple feeder area concerns are not now deemed a constraint by Network Rail in terms of our support for the Avanti West Coast application for December 2022.

In terms of other power supply constraints in Scotland, please note that ongoing modelling continues to highlight that there is only marginal capacity in normal feeding arrangements south of Carstairs in certain areas and at certain times of the day, and in cases of alternative feeding or major disruption operational mitigations may be required which are being discussed with operators. Further work is planned to provide a longer term solution to the power capacity constraints, as part of a combined 'Scotland and NW&C' programme.

iii. Please provide your conclusions on the impact of the Harker feeder issues, which appear to be overdue.

Appendix 4 includes the results of the Harker modelling (Appendix 4). It shows:

- a. The model clearly evidences that in real time scenarios introducing the proposed service changes are going to degrade the system in some capacity.
- b. The system has insufficient resilience should we lose a feeder through maintenance or incident (N-1) to run the train service. This is a mandatory system requirement from RSSB Rail Safety and Standards Board and part of Network Rail's network licence.
- c. Non compliant low voltages currently exist against NR / British Safety standards at Harker, this means poor acceleration, slower speeds and risk of failing to meet SRT's. Modelling shows in the worst case this falling between 17.5kV and 19kV (from 25kV) for up to 95 seconds.

Avanti has agreed to impose operational mitigations where required and other stakeholders will need to be engaged with further to ensure that the power supply is managed.

Rolling Stock

There is an emerging risk to the delivery of the line speed improvement project which is required to facilitate the introduction of the new rolling stock. Network Rail will require Avanti to continue to work jointly on the delivery of this project and agreeing mitigations against late delivery if required.

Conclusion

Network Rail is willing to support the access rights which reflect the services now formally offered to Avanti West Coast for the December 2022 timetable. Network Rail does not yet support the access rights for Avanti West Coast's proposed additional off-peak Euston-Liverpool services nor GUT's proposed Euston-Stirling services. Nonetheless, as previously mentioned, we are willing to work with both operators to continue to review their aspirations as and when further updates on the Bushey PSU and performance modelling work conclude.

Network Rail has recently been made aware of Avanti's West Coast future May 2023 timetable aspiration for an additional service to/from Glasgow plus a number of services running there instead of Blackpool. Network Rail only supports what is in the December 2022 timetable and further modelling work (performance and power) will be required before a conclusion can be made.