CAMPAIGN TO ELECTRIFY BRITAIN'S RAILWAY
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From: info@electrification-campaign.org
To: consultation@eastwestrail.co.uk
Subject: East West Rail 2026 Consultation Response
Date: 09 June 2026

Dear East West Rail,

Please find below our submission to your 2026 consultation. While we welcome further detail on the approach to powering the railway, we continue to raise serious concerns about the choice to pursue discontinuous electrification. In this email we introduce ourselves, summarise our response and provide further detailed comments.

About CEBR

- CEBR was established in 2018 following the cancellation of railway electrification projects across the UK. CEBR was primarily formed to support rail user groups in their individual campaigns to electrify their rail routes and to coordinate regional campaigns to help them create better railways.

Summary

- East-West Rail will be a welcome and transformative addition to the British rail network. We are, however, concerned about a lack of a clear rationale for choosing discontinuous electrification to power the route.

- We ask that East-West Rail set out clearly its options assessment behind its choice of discontinuous electrification versus a fully electrified option, including what assumptions were made, and how concerns raised in the consultation would be addressed.

- We are concerned there is a large degree of optimism bias based on such limited experience of battery electric trains in any similar use cases. As such any cost estimates come with far greater risk and uncertainty than those for traditional, full electrification, which is widely understood as the lowest whole-life cost system for railways.

- Through extensive engagement with industry, we understand that for discontinuous electrification:

  - initial capital cost-savings versus full electrification may be modest, if present at all;
  - train purchase costs and operational costs are increased compared to non-battery electric trains. These compound over time, such that the operational cost increases may outweigh any capital cost savings;
  - Power changeover points (switching between overhead line and battery power) add unreliability;
  - The whole system remains unproven for railway lines of the frequencies proposed, particularly between Bedford and Cambridge (trains running every 15minutes in each direction).
  - Diesel will still be required to haul freight trains, putting the 2040 phase-out target date at risk. We note that this is not made explicit in the consultation materials.

- Lastly, a key lesson of the Rail Industry's work, acknowledged by the Secretary of State for Transport in her statement on HS2 reset is that "future projects should use proven systems that comply with the relevant standards." Such extensive use of discontinuous electrification goes against this lesson.

Full response

The consultation document states that discontinuous electrification is the best cost option for the line, without setting out clear evidence for this position. We remain unconvinced of the case for discontinuous electrification and, in fact, there is significant risk any potential capital cost savings may not materialise and be outweighed by operating costs and further downsides.

We set out fives areas of concern below.

Capital costs

The justification for pursuing discontinuous electrification is based on the capital cost savings it offers versus electrifying the full route. While it does change the equation in certain specific circumstances, the changes to civil and electrical engineering costs may not amount to a net reduction.

Firstly, a large part of the cost of electrification works is in civil engineering: creating enough clearance for high voltage power cables under bridges or through tunnels. However, EWR is atypical in this respect. A large section of the line from Bedford to Cambridge is new thus would not require expensive retrofit works. The consultation sets out how EWR are "designing new

bridges with decks that are high enough for overhead lines to be installed underneath at a later date if required." Thus the costs of civil engineering are minimised for this section of the route. If EWR is route clearing the whole line, these civil engineering costs are accounted for across the whole route.

On other sections, modern innovations exist which reduce the need for such extensive civil engineering works. For example, voltage-controlled clearances (VCC) and changes to gradient rules, mean fewer bridges or tunnels need to be remodelled. These innovations have already reduced unit costs significantly on Midland Main Line Electrification and on Scotland's Railway. Thus while the greatest benefit is on the new section of route, the need for expensive civil engineering works that have inflated capital costs on previous electrification projects are minimised on EWR. Considerable costs are often associated with signalling immunisation when electrifying old lines. However, this is not applicable to EWR and its new signalling system.

Secondly, the infrastructure required to 'discontinue', end and earth sections of electrification and then resupply power further along the track may add cost and complexity rather than save it. For example, in Core Valley Lines in South Wales, they found cabling as expensive as installing electrification on a like-for-like basis. Additionally, RSSB's study on power-changeovers found considerable costs with interfaces between electrified and non-electrified sections. Thus the capital cost savings of discontinuous electrification may be limited, if not nullified by these additional works. Overhead power lines act as their own distribution network.

Operating costs

While capital costs may or may not be reduced, we are more confident operating costs will increase under the discontinuous model of electrification.

The addition of batteries and associated systems create much higher purchase (leasing) and maintenance costs for rolling stock. The largest cost-factor of any electric vehicle today is its batteries. In a letter to Olly Glover MP, EWR state a range of between £132,000 and £327,000 for electric-multiple units versus £188,000 and £450,000 for battery-electric-multiple units.

Furthermore, and depending on the intensity of use, batteries would need regular servicing and renewal. Bi-mode battery systems also add significant weight to the trains, and this increases track maintenance costs over time.

Additionally, battery electric trains require around 20% more electricity than trains drawing power directly from overhead lines or third rail. Fully electric trains, conversely, are well-established, highly reliable and comparatively very simple to maintain.

Unproven technologies

The high frequency, high speed service pattern proposed by EWR is better suited to full electrification.

The service pattern will see trains every 15 minutes in both directions (4 trains per hour) on many sections of the route. Such high capacity 'metro'-like systems typically operate under full electrification given the number of trains required, and the need to accelerate quickly between stops to maintain safe headways and reliable timetabling. We have not been able to identify any other discontinuous electrification system in Europe that operates at such high frequencies. Those being used in Germany and Austria or being considered in the Netherlands are on lower-frequency regional railways and branch lines that are unlike the East-West Mainline railway. Other routes in the UK such as South Wales Core Valley Lines do not operate large areas without wires, but rather have short sections and earthed sections.

Reliability vulnerability

Discontinuous systems are vulnerable to failure at 'power changeovers' points. Such points exist across the British railway where overhead electrification terminates, and trains must switch to alternative power. RSSB's study on power-change overs articulated the increased failure rates on railways that have power-changeovers. Additionally, EWR discontinuous arrangements where it will be powered in discrete sections will mean that the failure of any one feed will have a significant impact on reliability and performance. Other railways that are fed from multiple points, that are connected with electrification, can make alternative arrangements if one fails.

Contributing to a Net Zero railway

We acknowledge East-West Rails' commitment to be a Net Zero *passenger* railway, wording which enables the EWR to discount freight emissions. However, it does not escape the railway's wider commitment to phase out diesel trains by 2040. To achieve this with so many rail freight train paths will require full electrification. Rail freight has no alternative traction option beyond electrification, meaning that with discontinuous electrification, the line will see diesel freight trains operating well past the 2040 phase out date. With the full route opening and operational in the mid-to-late 2030s there would be limited time to electrify the route before 2050.

Assuming that electrification would be required to support rail freight decarbonisation, doing so at a later date once the line is operational, is considerably more expensive and disruptive than simply electrifying during initial construction.

The Chartered Institute of Logistics and Transport (CILT) has identified the Oxford-Bletchley corridor as a strategically critical target for electrification, as it lies on one of the most heavily trafficked freight paths through the GB rail network. Oxfordshire County Council's OxRail 2040 vision for rail in the county, while envisaging 'widespread battery train deployment' on currently unelectrified branch lines, identifies the Oxford-Bletchley corridor as 'Oxford's Electric Freight Spine', with full electrification required by 2037.

Conclusion

We remain unconvinced that the case for discontinuous electrification has been adequately demonstrated. We do not believe that there is sufficient evidence that discontinuous electrification will reduce whole-life costs, improve reliability, or deliver a lower-risk outcome than conventional full electrification. On the contrary, there is a significant risk that any modest capital cost savings are outweighed by higher rolling stock costs, increased operational complexity, lower energy efficiency, additional maintenance requirements and the eventual need to electrify the route fully to support freight decarbonisation.

East West Rail has the advantage of being built largely as a new railway, avoiding many of the constraints and legacy costs that have affected previous electrification schemes. This presents a rare opportunity to deliver full electrification during construction, when it is at its cheapest, least disruptive and most efficient. Retrofitting electrification in the future would inevitably increase costs and operational disruption while delaying the benefits it brings.

We therefore urge East West Rail to publish a transparent comparison of the full-life costs, risks and operational impacts of discontinuous and full electrification and to reconsider its current approach in light of the available evidence.

A fully electrified railway would provide the most reliable, future-proof and cost-effective solution for passengers, freight operators and taxpayers alike, while aligning with the Government's objective that future railway projects should utilise proven, standards-compliant technologies and support the decarbonisation of the wider rail network.

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