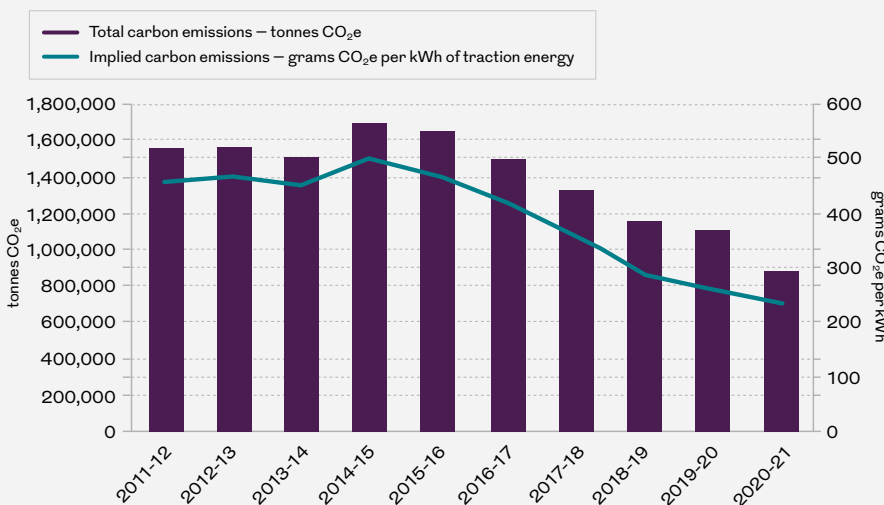


The diesel dilemma: how will decarbonisation affect the UK's rolling stock?

By Matthew Franklin – Senior Credit Analyst, Beth Goldsmith – Responsible Investment Analyst and Tom Johnson – Sustainable Investment Analyst.

Figure 1: CO₂ emissions from traction electricity on trains



Source: Train and freight operating companies as at August 2021.

The transport sector is a significant contributor to the UK's carbon footprint. In 2020, transport accounted for almost 30% of total carbon dioxide emissions¹. Although rail is considered as a lower carbon alternative – passenger trains produce a third of the emissions of the average petrol car – it is not immune from the government's decarbonisation agenda.

Traction energy, the energy required to pull the trains, makes up two-thirds of current rail emissions, with the final third coming from the systems operating the network, stations and depots. Emissions from the electricity used for traction energy has fallen considerably over the last decade, as demonstrated in Figure 1, aided by a significant phasing out of coal, and a rapid rise in renewable energy generation. However, this means most passenger train emissions now come from diesel trains. As a result, in 2020, the Rail Industry Decarbonisation Taskforce set a 2040

deadline to remove all diesel-only passenger trains from UK railways, declaring that: *“for rail to support the UK in achieving its net-zero legislative targets, diesel operation will need to reduce and potentially cease.”*²

The benefits of bespoke research on rolling stock companies

RLAM wanted to understand the potential impact of decarbonisation targets on the sector, and the effect on the investment case for rolling stock owners (ROSCOs). However, third-party research on the sector as a whole is very limited, with none to date on this particular topic, making this fertile ground for our bottom-up analysis and engagement.

Through targeted environmental, social and governance (ESG) analysis, we have been able to evaluate the potential impact of decarbonisation on the UK rail

What does replacing diesel mean for rolling stock owners?

While attempts to speak to Network Rail and the Department for Transport (DfT) proved unsuccessful, Network Rail's *Traction Network Decarbonisation Strategy* provided useful context on the potential options for the network.³ The following three scenarios set out likely policy initiatives for decarbonising transport, as well as examining how the three ROSCOs are preparing themselves.

Scenario 1: Significant electrification

Electrification would likely see existing diesel trains being run down to the end of their useful lives within the 2040 timeframe, being replaced with wholly electric trains. Also, for short sections of track which might not be electrified, two of the companies are investigating the opportunity to use either regenerative braking or battery storage to help bridge gaps. However, without significant

network, and the impact this could have on three privately-owned ROSCOs we have exposure to: **Porterbrook**, **Angel Trains** and **Eversholt**. We contacted each to determine their preparedness, re-evaluate the lending case and also consider the longer-term outlook for the sector.

Integrating this bespoke ESG analysis into our credit analysis helps us make more informed investment decisions, and forms part of our highly targeted approach of direct engagement with credit issuers. This project also provides a critical framework for future Royal London Asset Management engagement and analysis on the sector.

¹Department for Business, Energy & Industrial Strategy – 2020 UK greenhouse gas emissions, provisional figures

²Network Rail: Interim Programme Business Case – Executive Summary

³Network Rail: Traction Decarbonisation Network Strategy – Interim Programme Business Case

improvements in storage technology, battery technology is unlikely to provide more than short-term boosts on already electrified lines.

Scenario 2: Missing the 2040 target

If the forthcoming UK transport decarbonisation strategy does not commit to an increase in rail electrification, there will either be a shortage of new diesel trains to keep routes operational, or a reliance on inefficient older rolling stock which would otherwise have been scrapped. This creates an unusual situation where diesel trains could be in higher short-term demand, at odds with the government's decarbonisation agenda and creating an opportunity for supernormal profits for ROSCOs with weaker decarbonisation plans.

However, any ROSCO adding new stock would have to do so knowing that these assets would be in operation for fewer than 20 years in order for the government to keep its target, making them extremely hard to finance.

The most likely option would be to invest in new bi-mode rolling stock (requiring further capital market funding) or retrofitting alternate electric and lower-carbon traction to existing diesel fleets (cheaper, but with a lower additional asset life). With two of the three companies expecting minimal diesel-only exposure by the end of the decade, their strategy remains consistent with a missed 2040 target. Even delaying by ten years, the rail network will still need significant investment in a carbon-free fuel source from 2050 onwards.

Scenario 3: Hydrogen fills the gaps

Trials from hydrogen-powered trains in Lower Saxony⁴ suggest they can run for similar distances to diesel trains, with the only by-product being water. Although Porterbrook has publicly demonstrated a working 'HydroFlex' train, there are several barriers to operating hydrogen trains in the UK, namely finding reliable and affordable sources of 'clean hydrogen' and storing it appropriately in sufficient quantities, a process that often proves energy intensive. Moreover, even if clean hydrogen can be sourced and stored, converting existing trains would require significant retrofitting. The alternative would be to replace existing assets with new, more expensive rolling stock, purpose-built to run on hydrogen, shortening the asset lives of the diesel vehicles being replaced.

In our view, for hydrogen to become a feasible part of the decarbonisation solution for railways, the UK government and Great British Railways must commit to developing hydrogen production and storage infrastructure.

Assessing the diesel exposure of the ROSCOs

Under all three scenarios, the UK's fleet of over 3,000 diesel trains will need conversion, scrappage or replacement. Network Rail notes that "*decisions about replacement or augmentation of older diesel rolling stock will need to be made within the near term*".⁵ However, "*ultimately diesel cannot play any part in a zero-carbon railway and procurement of new diesel-only trains is likely to carry a significant volume of risk that they will be made redundant beyond 2050*".⁶

This risk of redundancy could see the useful economic life of assets cut short, potentially impacting the value of those assets for the ROSCOs. From our conversations with Angel Trains, Eversholt and Porterbrook, each has differing levels of exposure, as well as different attitudes on how decarbonisation will impact their investment plans. In short, one is firmly expecting to have minimal diesel exposure by the end of the decade, and one is looking to ensure that any new trains with an element of fossil fuel power will be hybrids. The third ROSCO could make a case for purchasing new fleets of diesel trains and is less likely to look at converting existing diesel stock.

Potential Balance Sheet Impact and Credit Mitigants

All three borrowers are externally rated, but there is minimal difference between ratings (all are rated Baa2 by Moody's; Eversholt also has a Fitch BBB+ rating). There is also little difference in credit spread between the three companies' bonds, with fewer than ten basis points' difference in credit spread between the tightest and widest bonds at similar maturities.

To assess the potential balance sheet impact, we reviewed the proportion of each ROSCO's rental incomes and forecasts of how they would evolve over time, assuming no further train purchases.

The current 2040 targets look manageable for all three ROSCOs (assuming no new asset purchases), with

Investment Implications

In terms of current decarbonisation plans, we do see one ROSCO as having a better starting position, owing to its very low day-one diesel exposure. After recently investing in new diesel trains, it has accepted the need for conversion in its asset models. A second ROSCO is also well positioned; while it has a larger diesel fleet, its relatively short remaining life removes fleet exposure well ahead of 2040.

We believe that the third ROSCO appears behind the pace in its plans to decarbonise. However, while continuing to purchase new diesel trains could give rise to asset stranding risk (if not appropriately priced by management), this exposure is likely to be manageable within the context of its overall portfolio. Also, as government inactions could unintentionally reward those ROSCOs with less advanced decarbonisation plans, that company may benefit should targets be missed.

diesel exposure reducing as those assets reach the end of their natural life ahead of the deadline. Conversion of these assets would incur additional costs but should extend their asset lives.

If the deadline was brought forward to 2035, which at this stage appears unlikely, we believe that one of the ROSCOs is more exposed. The key risk is the future purchases of additional diesel-only units. A potential protection against this are credit enhancements, with all three ROSCOs bonds providing varying degrees of protection for lenders against these risks.

Looking at credit enhancements among the three borrowers, only one offers a net present value (NPV) covenant, limiting debt to 80% of NPV, while the other two are reliant on weaker leverage and interest cover covenants, which would not capture any future stranding risk for diesel assets until it occurs. Two of the ROSCOs also benefit from a coupon step, where coupons will increase by 1.25% should ratings fall below investment grade, which would further dampen any impact from a deteriorating balance sheet.

The long-dated nature of the impact of decarbonisation has also laid bare the fundamental weakness of using 'point in time' measures in isolation. Ratings agency analysis fails to capture the long-dated nature of the assets (and risks) facing the sector. The need to take a whole of life

⁴Industry Week: World's First Hydrogen Train Runs Route in Germany ⁵Page 31 – Network Rail Interim Programme Business Case ⁶Page 80 – Ibid

approach in assessing risk also extends to the covenants protecting lenders. In our view, point in time interest cover or leverage covenants offer far less protection than debt to NPV limitations.

Conclusions

Our analysis suggests it will take a step-change in technology and infrastructure for the UK government to achieve its 2040 diesel objectives. What is also clear is that ROSCOs are not the masters of their own destiny. While they can plan for the decarbonisation of their fleets, they remain hugely dependent on the long-term decisions and funding of the UK government and Great British Railways.

Our analysis gives us comfort that the risk of asset stranding is very low for two

of the ROSCOs, and remains low for the third. Furthermore, our lending to the three main ROSCOs is secured with a senior claim, on a highly covenanted basis, providing significant protection to lenders. This can help to further mitigate the risks posed by decarbonisation on diesel train asset lives (and management actions).

Current credit spreads are attractive for all three borrowers, more than compensating for this and other credit risks, with our analysis pointing to one of the three as clearly more attractive, which will feed through into investment decisions in credit portfolios. However, we will continue to monitor the progress of all three ROSCOs as their capital expenditure plans develop over time.

Note on sources

This report draws on publicly available data from the Office of Road and Rail, along with ongoing policy development from Network Rail (soon to be Great British Railways), coupled with discussions with credit issuers.

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Royal London Asset Management

55 Gracechurch Street
London EC3V 0RL

For advisers and wealth
managers

bdsupport@rlam.co.uk
020 3272 5950

For institutional client
queries

institutional@rlam.co.uk
020 7506 6500

www.rlam.co.uk

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