

COAL: TRUTH VS FICTION

THOMAS BRIGHT breaks down the issues surrounding preservation's potential coal crisis, and separates the facts from the fiction.

It has been more than 12 months since the Department for Environment, Food & Rural Affairs opened its consultation on its proposals to phase out the sale of bituminous coal for household use. The consequences for steam railways and the preservation industry as a whole, should these proposals be implemented, will be significantly damaging, as the All-Party Parliamentary Group on Heritage Rail concluded in its recent 'Steaming Ahead: Heritage railways, coal and the future of steam locomotives in the UK' report, published in July (SR495).

Preservation's looming coal crisis has been extensively covered over the past year in numerous editions of *Steam Railway* – whose coverage was acknowledged by the APPGHR for helping to inform the group's discussion. But with such a complex and far-ranging subject, it is all too easy to lose sight of the wood for the trees. While the preservation world waits on tenterhooks for DEFRA's formal announcement, let's remind ourselves of the issue and its ramifications.

COAL CONUNDRUM

In January 2019, DEFRA published its updated 2019 Clean Air Strategy. As part of its aim to reduce national particulate matter emissions, it proposed to phase out the sale of bituminous coal for household use and impose strict 2% sulphur limits on all solid fuels intended to be burnt in domestic grates in England. As a devolved issue, this would not affect Wales, Scotland or Northern Ireland, and there was no mention of targeting steam railways, nor any other heritage coal burners.

However, this proposed legislation presents a grave concern for the whole preservation industry throughout the UK.

With an estimated 130,000 tonnes of coal burnt per annum, the household market is Britain's major consumer of sized, lumped coal, i.e. the same size and variety of coal burnt in steam locomotives, traction engines, steam ships and most other steam-powered vehicles and machines. By

comparison, steam railways only consume an estimated 26,000 tonnes per year, while the preservation industry as a whole burns 35,000 tonnes.

As a result, preservation works off the back of (and is entirely reliant upon) the domestic household market for its supply of sized, lumped coal. If the sale of traditional coal for household use is phased out, coal suppliers and merchants have warned that the comparatively minimal demand from the preservation industry alone will not be enough to sustain their business.

Furthermore, the three opencast mines from which railways mainly source their UK-produced coal – Ffos-y-Fran in South Wales, Shotton in Northumberland and Garlaffen in Ayrshire – are all set to close in the next couple of years, so in addition to the impending closure of Britain's coal-fired power stations by 2025, any such ban would hasten the decline of an already-ailing coal mining industry.

We would thus be forced to import coal from abroad – namely Russia, as many railways do already – but without the demand from the household market to improve the scale of economies, prices are expected to rise exponentially. The Heritage Railway Association estimates this could be as much as 400% over and above current prices, and with the majority of railways unable to offset significantly higher coal costs, running steam locomotives may no longer be viable for many, resulting in job losses and potential railway closures.

Furthermore, without significant national demand for sized, lumped coal, the HRA fears that the screening, sizing and distribution network for handling and transporting such coal will disappear, further increasing costs and the challenges in moving coal to where it is needed.

In short, getting the right coal at the right price will become very difficult – if not impossible – all as an unintended consequence of DEFRA's plans to eliminate the burning of coal by households.

Following the publication of the APPGHR's report in July, the HRA said: "The risks of scarcity driving coal prices

No more main line steam? 'Black Five' No. 45231 crosses Cyngordy Viaduct with the Pathfinder Tours 'Sugar Loaf Mountaineer' railtour on September 7 – the first steam-hauled passenger train over the Central Wales Line since June 1964. BOB GREEN

ever higher, and the potential ultimate unavailability of coal, represents perhaps the biggest threat to steam traction since British Railways' 1955 Modernisation Plan. Without coal, the future of heritage rail in the UK – and all it delivers in terms of economic benefits, employment, education, social cohesion and entertainment – would be in grave doubt.”

Steam Railway and the HRA are collaborating on a campaign to persuade DEFRA to drop coal from its proposals, citing the minimal environmental benefit from banning coal versus the overwhelming economic,

cultural and historic impact that would be caused by doing so.

However, owing to the present political turmoil in Westminster – which has resulted in DEFRA's Minister of State, Thérèse Coffey, being promoted to Secretary of State for Work & Pensions – we have decided now is not the best time to launch such a campaign.

In spite of this self-enforced delay, we will be launching our campaign in the coming weeks and months, and we will be calling on every one of our readers to help us support Britain's preservation industry.

“ WITHOUT COAL, THE FUTURE OF HERITAGE RAIL IN THE UK... WOULD BE IN GRAVE DOUBT ”

GET YOUR FACTS RIGHT

In the year since DEFRA launched its consultation, numerous misconceptions about coal and its future have been doing the rounds. Allow us to set the record straight.

CLAIM: DEFRA is targeting emissions from preserved railways.

REALITY: Despite what has been reported elsewhere, DEFRA and the Government are NOT targeting emissions from heritage railways. In fact, DEFRA is not targeting railways or heritage coal burners at all. The potential coal crisis has arisen from DEFRA's proposals to phase out the sale of bituminous coal for household use, and impose sulphur limits on all solid fuels intended for domestic grates, in order to curb particulate matter emissions from households burning solid fuels. Indeed, DEFRA told *Steam Railway* in November last year that: “Steam railways fall outside the scope of the proposed regulations,” and “we are not planning to restrict the use of coal by steam railways”. The threat to the railways' coal supplies is an unintended consequence of DEFRA's proposals, because of the knock-on negative effect its proposed legislation will have on preservation's coal suppliers. Categorically then, DEFRA and the Government are not targeting heritage coal burners specifically and – for the moment at least – railways will not be subject to any further emissions regulations.

CLAIM: We will get an exemption from DEFRA, so we have no need to worry.

REALITY: DEFRA has told *Steam Railway*, the HRA and other concerned stakeholders

that heritage coal burners will be exempt from any legislation arising from its proposed coal ban, and that it is not seeking to ban the mining or burning of coal for use on steam locomotives.

In its ‘Steaming Ahead’ report, the APPGHR called on DEFRA to make this exemption explicit: “DEFRA should make it clear in future environmental and strategy documents that there is no intention to prevent coal burning in steam locomotives either on heritage railways or on the main line network.” As of early September, however, we are yet to receive any formal confirmation from DEFRA that this will indeed be the case.

However, if the proposed ban goes ahead, an exemption is barely worth the paper it is written on.

Although it is anticipated that legislation won't prevent railways from buying or burning coal, because we are entirely reliant on the continued demand from, and supply to, the domestic household market for our own supply of sized, lumped coal, producers and suppliers have warned the demand from the heritage market alone will not be sufficient to sustain them.

This, in turn, means we will likely be forced to source coal from overseas, which will likely increase prices to the point where it will potentially become economically unviable for many railways, the majority of which are already marginal businesses and unable to effectively absorb any significant increase in costs.

Therefore, if this proposed coal ban is implemented, we will still find it challenging to source the right coal at the right price, regardless of whether or not DEFRA grants heritage coal burners an exemption from its planned legislation.



Idyllic images like this are something DEFRA's proposals to ban the sale of coal will threaten. 'Merchant Navy' No. 35028 *Clan Line*, pauses in bucolic surroundings at Kingscote on the Bluebell Railway while hauling the 2.30pm Sheffield Park-East Grinstead service on August 27. PAUL BLOWFIELD

CLAIM: We can get coal from the new coal mine in Cumbria.

REALITY: On March 19, Cumbria County Council controversially approved planning permission to West Cumbria Mining to develop its proposed Woodhouse Colliery near Whitehaven. When opened in around 2022, it will be Britain's first deep mine since Kellingley Colliery closed in 2016.

On the face of it, a new coal mine is good news for the preservation industry, especially in light of the fact that railways' present UK sources of coal are all expected to close within the next few years. Some people have proposed that Woodhouse Colliery could become an alternative UK source of coal for railways.

Alas, Woodhouse is a complete red herring, chiefly because its primary function is to extract metallurgical – i.e. coking – coal for the steelmaking industry, which is of a completely different grade to the ‘steam coal’ required by steam locomotives and other heritage coal-burning machines. In other words, it may be a coal mine, but its output will be useless to steam railways.

Furthermore, by the time it starts

producing in around 2022 – and depending when and if DEFRA implements its proposed coal ban – the supply and distribution network necessary for screening, washing, sizing and transporting sized, lumped coal may have already collapsed, as is feared by the HRA if such a coal ban comes into effect.

CLAIM: If coal goes, we can easily switch to alternative fuels, such as oil.

REALITY: It is a common misconception that, if and when coal supplies dry up, we can easily switch to alternative forms of fuel, particularly oil-firing, as it has been used extensively and successfully elsewhere. Although this principle is sound in theory, there are numerous obstacles that make oil-firing unviable.

First of all, there's the cost. The Ffestiniog and Vale of Rheidol railways were two of the biggest users of oil-fired steam locomotives in preservation, converting the majority of their respective fleets in the 1970s. At the turn of the last decade, both lines converted their locomotives back to traditional coal firing, owing to the steep rise in the cost of oil.

At the time, the FR estimated the coal cost to be approximately £180 per tonne, whereas the equivalent amount of oil cost in the region of £660.

Although both railways had enjoyed great success with their oil-fired engines, this disparity meant oil was no longer economically viable. As of September 2019, there are few – if any – working oil-fired locomotives in the UK.

It is possible that if we are forced to source coal from abroad, the resultant likely price increase will tip the balance in the favour of oil, although in that scenario, the cost of either fuel would likely make it challenging, if not impossible, for railways to run steam locomotives economically.

Oil is not the only alternative fuel however. Some people have cited wood as a possible replacement, but wood does not have anywhere near the same thermal efficiency or energy density of coal, so it is not a practical alternative – environmental concerns over wood-burning notwithstanding.

The Barry Tourist and South Tynedale railways have reported success in their experiments with biomass fuel logs, but these are vastly more expensive per tonne

than coal, and still do not have comparable thermal efficiency or energy density.

There are storage problems with these as well. Whereas coal is hydrophobic (i.e. it doesn't absorb water) and can therefore be stored outside in all weathers, biomass fuel logs are not, and become a useless sludge if they get wet.

Fuels such as biocoal (organic biomass torrefied to form a coal-like substance) marry the benefits of biomass fuel logs with the positive properties of coal, boasting a similar – if slightly inferior – thermal efficiency and energy density, reduced harmful emissions and hydrophobic qualities. Alas, while a number of organisations, notably the Coalition for Sustainable Rail in the USA, are developing biocoal, such fuel is not sufficiently developed at this stage to be a viable alternative.

Even if biocoal is sufficiently developed into a viable alternative, preservation insiders have expressed doubts over its efficiency, availability and cost. In other words, there are currently no suitable or viable alternative fuels to coal, a scenario which greatly exacerbates the potential consequences of DEFRA's proposed ban. **SR**