



# COAL

## *in the firing line?*

On January 14, the Department for Environment, Food & Rural Affairs unveiled its 2019 Clean Air Strategy. This document put coal firmly in the spotlight. **THOMAS BRIGHT** examines how DEFRA's proposals threaten the future of 'black gold'.



Coal. It is the foundation upon which the preservation movement is built. In its central role as the lifeblood of the Industrial Revolution, coal gave birth to both the steam locomotive and railways as we know them today, as mine owners sought more efficient alternatives to horses for transporting their vital and lucrative output from pit to factory.

From these humble seeds the national railway network grew and, despite brief flirtations with oil-firing throughout the years, coal has remained the lynchpin of locomotion ever since Richard Trevithick's Pen-y-Darren locomotive embarked upon its pioneering journey in 1804.

From *Tornado* galloping down the East Coast Main Line at 100 miles per hour to the innumerable, regular services on Britain's preserved railways running on any given day throughout the year, none of it is possible without coal.

But this vital fuel is under threat, and the preservation movement is facing serious challenges in the next few years that could alter the railway landscape forever.

#### **So, what's the current threat?**

January 14 2019 may well go down in history as a pivotal day for steam preservation in Britain. On that day, the Department for Environment, Food & Rural Affairs unveiled its updated Clean Air Strategy to reduce particulate matter emissions by 30% by 2020, and 46% by 2030.

Under Section 6 of this 109-page document, DEFRA outlined its plans to reduce household emissions, particularly from wood and coal-burning stoves and other heating appliances. It said that: "the burning of wood and coal in the home is the largest single contributor to national particulate matter pollution" and that "domestic burning contributes 38% of particulate matter pollution, compared with 16% from industrial combustion and only 12% from road transport."

This comes off the back of a public consultation launched last August on the burning of wood, coal and other solid fuels for household use. Among the proposals outlined in this consultation were:

- Restricting the sale of wet wood for domestic burning.
- Applying sulphur standards and smoke emission limits to all solid fuels.
- Phasing out the sale of traditional house coal.

It is the latter two points that could have serious and unintended consequences, not only for steam locomotives and preserved railways, but all other heritage coal-burning institutions.

While it has yet to publish the formal response to its consultation on solid fuels, the Government has already appointed HETAS (Heating Equipment Testing and Approval Scheme) – the specialist organisation approving biomass and solid fuel heating appliances, fuels and services – as the contractor to provide technical support to enable DEFRA to meet its legal obligations under the Clean Air Act 1993, so the wheels have already been set in motion.

The proposed legislation has the very real potential to make it extremely difficult for preservation to source suitable coal at an affordable price, effectively stifling our supply of fuel and greatly impeding railways' ability to operate steam locomotives in the manner to which we have become accustomed.

So serious is this threat, that a number of organisations from across the whole steam heritage movement – not just railways but from the worlds of traction engines, steamships and museums operating steam-powered exhibits – are banding together to form the Heritage Fuel Alliance, in order to take action on a united front (see next page). Such collaboration is unprecedented, and demonstrates the seriousness of the threat now faced by our railways and other heritage coal-burning institutions.

- To read DEFRA's consultation in full, visit: <https://bit.ly/2M6yz58>
- To read or download the Clean Air Strategy 2019, visit: <https://bit.ly/2AJ8kNZ>



Fireman Charlie Barber shovels another round of coal into the firebox of '7MT' No. 70013 *Oliver Cromwell* while it hauls 'The Cheshireman' on behalf of the Railway Touring Company on October 19 2013.  
PETE HACKNEY

#### ***This is all to do with domestic coal burning. There's no mention of steam locomotives or railways, so what's the problem?***

To fully understand this issue, we need to backtrack a little. The most obvious threat to preservation's coal supply is the continuing decline of the domestic coal mining industry. It is no secret that it has been in hastening decay for the last few decades, a situation exacerbated in November 2015 by the announcement from the then Energy Secretary, Amber Rudd, that the Government intended to close all of Britain's coal-fired power stations by 2025, thus killing the domestic coal mining industry's biggest single customer.

Signs that the end was drawing near first came on April 21 2017, when not a single lump of coal was burnt for power generation – the first day that 'black gold' had not helped to keep our homes warm or our lights on since the Victorian era. In April

the following year, domestic electricity production went for three consecutive days without coal and, as of July 2018, Britain had gone for more than 1,000 hours without coal power.

Coal production in Britain has dropped a staggering 76% in just five years (from 12.6 million tonnes in 2013, to just over 3 million in 2017) while imports from overseas sources have fallen by 83% over the same period. In short, the last embers of the white heat of the Industrial Revolution are rapidly being extinguished.

Such decline is inevitable, as concerns about the environmental impact of burning non-renewable fossil fuels have created additional pressure to do away with coal altogether and move towards cleaner forms of energy and heating. And while there are still hundreds of years' worth of coal buried underground, there is little financial or political incentive to exploit those remaining seams, which potentially leaves preservation facing a major crisis.

#### ***But this is nothing new and we have weathered the storm until now. What's all the fuss?***

It is true that the preservation movement has largely been unaffected by the changing fortunes of the coal mining industry. Even as domestic production has decreased, the demand from the energy sector alone has ensured a plentiful supply of imports, off the back of which preservation has been able to source the sized, lumped steam coal it needs for steam locomotives, traction engines and other steam-powered vehicles and exhibits.

For instance, while its main function is to supply the Tata Steel works at Port Talbot, the opencast Ffos-y-Fran mine in Merthyr Tydfil, South Wales, also supplies high-quality Welsh steam coal to many preserved railways.

Even after all the power stations close (and some estimate that day will come before the 2025 deadline), there will still be



significant demand from other industries for steam coal – albeit greatly reduced.

Howard Johnson is the former managing director of coal wholesaler and importer Johnson Wholesale Fuels Ltd, and he has nearly 40 years’ experience of the coal industry. In addition, he is also on the board of the North Yorkshire Moors Railway and has been advising both the Heritage Railway Association and National Traction Engine Trust (NTET) on all matters coal. He says: “There will always be coal available somewhere in the world; the world, quite simply, cannot survive without it. We need coal for steel, cement, cars, HS2, house-building and many more industries.”

That said, of the few opencast mines still operating, almost all that supply the preservation industry are expected to stop production within two years (see panel) as, although there is still material that remains to be extracted, the Government has refused planning applications for both extensions to current sites and for the creation of new ones. Similarly, the Welsh government has adopted a policy of only granting planning permission for coal mines under “exceptional circumstances”.

Howard says: “It is quite feasible that without any of the outstanding surface mine extensions or new developments being granted then we will, within two or possibly three years at the latest, be totally reliant upon imports. This country will still require in excess of nine million tonnes of industrial imported coal after the closure of our power stations in 2025, so there is still a massive requirement.”

**So, coal is not going to run out then?**

Not altogether, no. But the threat posed by DEFRA's Clean Air Strategy and proposed legislation to phase out the sale of bituminous coal could sound the death knell for Britain's coal industry and be the final nail in the coffin for sized coal production and distribution.

Here's the issue: in November last year, a DEFRA spokesman told *Steam Railway*: “We are not planning to restrict the use of coal by steam railways. The new regulations will not place any restrictions on the mining of coal, and coal will continue to be available for steam railways.”

On the face of it, this is good news, and other concerned stakeholders – such as the HRA – have reported that DEFRA has given assurances that, should the proposals come into force, railways and other heritage coal burners would be exempt. However, the law of unintended consequences comes into play.

In the same statement, the DEFRA spokesman said: “As steam railways fall outside the scope of the proposed regulations, we have not directly estimated the impact on them.”

This is the problem: according to Government figures, steam coal – the variety of coal burnt in steam locomotives, traction engines and other steam-powered vehicles – accounted for 73% of Britain's total coal consumption in 2017. However, the vast majority of this consumption was granulated coal for energy production and industry, approximately 0-50mm in size, and thus not suitable for locomotives, which burn coal of 25-120mm in size.

The biggest consumer of that size of coal was the household market, which, although accounting for just 3.3% of total steam coal consumption, used around 25 times more sized, lumped coal than the preserved railway industry alone. Railways burnt a comparatively tiny 15,000 tonnes – 0.1% of the total, though the Heritage Railway Association estimates that this figure is nearer



No more Welsh coal? ‘28XX’ No. 2807 – a locomotive designed to burn Welsh steam coal – rests in Toddington yard on the Gloucestershire Warwickshire Steam Railway on April 6 2016, alongside a fresh delivery from Ffos-y-Fran. THOMAS BRIGHT/SR

26,000 tonnes (see next page), but even that would only amount to a paltry 0.25% of Britain's total demand for steam coal.

However, some – including CoalImp (Association of UK Coal Importers) – have called DEFRA's figures into question. Howard says: “The numbers that they have used are wildly incorrect and have been overstated by almost three-fold. Sized coal sales figures that DEFRA used were in excess of 360,000 tonnes, whereas the real figure is closer to 130,000, of which 30,000-plus could be heritage sales!”

If DEFRA's proposals are implemented and coal merchants are unable to supply sized, lumped coal to their biggest market, railways and other heritage coal-burning institutions will suddenly become the largest – if not only – consumer of such coal, but the already all but negligible demand from this sector alone cannot sustain the production, distribution and supply chain.

So, while there will still be demand for coal from the steelmaking industry for example, comparatively speaking, there will be next to no demand for sized, lumped coal. The fear then is not necessarily that supplies of coal will dry up, but that the distribution and screening network necessary for supplying and transporting sized coal will cease to exist as the market all but disappears.

Howard says: “Distribution over the years will become more difficult due to coal-handling ports being strategically selected and contracted to handle high-volume, low-preparation – i.e 0-25 or 0-50mm industrial coal – to suit the specific needs of their volume customers.

“Also, there will be physically fewer coal merchants, so the distribution network that we know today will be vastly different and it will become more difficult to facilitate orders quickly and efficiently to isolated parts of Great Britain.”

With domestic supply already dwindling, and faced with the

distinct possibility that the market for sized, lumped coal will all but cease to exist when DEFRA phases out the sale of such coal for the household market, preserved railways may be solely reliant on imports. There are fears that this will likely push the cost of coal up to the point where it could become economically unviable.

So, even if railways and other heritage coal-burning organisations are exempt from DEFRA's proposed rules, we are potentially facing a ban on coal by default.

**Isn't this all just scaremongering?**

Absolutely not. Howard Johnson says: “Railways have not been specifically targeted by the proposals; however, once the domestic market is closed to coal burning, then mines and importers will simply have no economic reasons to produce or import large quantities of sized coal.

“The heritage industry in this country uses approximately 30,000 tonnes, which is a nominal amount and nowhere close to sufficient to keep a UK surface mine open; most operations need to be selling a minimum of 500,000 tonnes to be viable.”

CoalImp adds: “While the proposals do not include any specific reference to the use of coal on steam trains, any phasing out of house coal for domestic use will also have a significant impact on this sector. Suitable coal would have to be purchased

from international sources at much higher prices, threatening the viability of these popular rural businesses and the many associated tourist-related jobs.”

Preservation's biggest coal supplier, Hargreaves Services plc – which supplies coal from the Garlaffen mine in Scotland, Shotton in Northumberland and Ffos-y-Fran in South Wales – is so concerned by the potential impact of the proposed regulations that it has broadcast dire warnings if these proposals were implemented.

It says: “It is our view that the proposed ban on house coal will have a detrimental impact on the steam preservation sector.

“Any move to prevent the sale of house coal would certainly damage the business of the UK's remaining coal producers, with a corresponding loss of jobs, both directly, and within the local area. Removal of house coal from the product range from UK coal producers would have a serious impact on the viability of current and future [coal mining] sites.

“There will be a knock-on effect with future sized coal imports, as the smaller, 25-50mm size range will have to be crushed and sold either to cement plants/power stations at much lower prices, which will inevitably push up the price of coal for the heritage market.

“While we believe that it will still be possible to import coal of a suitable quality in the future, when UK production inevitably ends it will still create a lot of uncertainty on pricing owing to international coal price volatility, currency fluctuations and financing costs.

“Hargreaves welcomes the support of all our colleagues in the heritage sector in lobbying to stop the imposition of a coal ban, which clearly is discriminatory compared to the burning of wet wood and will have a significant impact on the heritage sector.”

Perhaps the biggest indicator of how seriously preservation is treating the threat posed by DEFRA's proposed regulations is the fact that elements from organisations across the steam preservation spectrum have come together and formed the Heritage Fuel Alliance.

Comprising the HRA, the NTET, the Federation of British Historic Vehicles Clubs, the Transport Trust and the Association of British Transport & Engineering Museums, the HFA “represents Britain's principal users of coal, including heritage and main line railways, owners of steam road vehicles and boats and heritage engineering museums and historic houses” and it is lobbying the Government to protect preservation's right to burn coal at liberty.

As mentioned, such collaboration is unprecedented and shows the gravity of the threat facing preservation as a whole.

In its manifesto, the HFA says: “We ask that the Government should defer seeking to eliminate domestic coal burning as that will certainly lead to the collapse of the UK coal distribution network and threaten our ability to source reliable and economic supplies of coal.”

HRA Chief Executive Steve Oates says: “The future of coal supplies is firmly at the top of our agenda. The Government's proposals to ban household coal and to end UK coal mining threaten our supplies and our very existence.

“The Heritage Railway Association is taking the lead in urging the Government to ensure our members retain the right to continue the traditional use of coal in steam locomotives, are able to secure ready and affordable supplies of suitable coal, and accordingly can continue to operate and grow their businesses fully unhindered. And we are urging that measures – whether planning, regulatory or otherwise – are put in place to ensure

**OPENCAST OPEN ENDING?**

Mine	Location	Owner	Planned closure
Garlaffen	Ayrshire	Hargreaves	2019-21
Shotton	Northumberland	HJ Banks	2019
Ffos-y-Fran	South Wales	Miller Argent	2019/20
East Pit	South Wales	Celtic Energy	2020/21

“ THE HERITAGE INDUSTRY IN THIS COUNTRY IS NOWHERE CLOSE TO SUFFICIENT TO KEEP A UK SURFACE MINE OPEN ”

HOWARD JOHNSON, FORMER MANAGING DIRECTOR, JOHNSON WHOLESALE FUELS



the retention of, at least, some limited UK-based mining of low-sulphur bituminous coal or dry steam coal, which will ensure some certainty of supply and the retention of at least some of the supply and distribution network.

Mr Oates went on to summarise the key issues and points raised by a number of railways at the HRA's autumn management conference on November 8:

- Any substantial increase in coal costs may require cutting costs elsewhere or reducing operations.
- A widespread view that visitors will be deterred if fares are raised significantly to cover the increased costs.
- Concerns about the quality of coal obtainable and the potential increase in maintenance requirements.
- It may lead to the use of smaller or more 'economic' locomotives.
- Replacing steam with diesels will lead to reduced visitor numbers.
- Railways are already thinking about their environmental footprint and how to mitigate environmental issues with burning coal.
- Research into alternatives is needed.

**How much coal do railways currently use?**

It depends on where you look. According to the Department for Business, Energy & Industrial Strategy's coal statistics, preserved railways currently consume an average of 14,000 tonnes of coal per year. However, this figure does not include the coal burnt by traction engines and other steam-powered vehicles.

The HFA estimates that "heritage railways use about 26,000 tonnes of coal per year, while coal-burning steam-driven vehicles, machines and their derivatives (models etc) use about 4,000 tonnes each year. The amount consumed in museums and historic houses comes to a few hundred tonnes only.

"By comparison, Drax power station could consume up to 36,000 tonnes *a day* before it was converted to burn biomass fuel."

At its autumn management conference, the Heritage Railway Association provided a breakdown of the annual coal consumption figures for a number of preserved railways:

North Yorkshire Moors Railway.....	2,500 tonnes
Mid-Hants Railway .....	1,000 tonnes
Kent & East Sussex Railway.....	900 tonnes
Swanage Railway .....	800 tonnes
East Lancashire Railway .....	750 tonnes
Llangollen Railway .....	590 tonnes
Isle of Wight Steam Railway .....	250 tonnes
Romney, Hythe & Dymchurch Railway .....	250 tonnes
Nene Valley Railway.....	150 tonnes
Epping Ongar Railway.....	140 tonnes
Talylyn Railway.....	95 tonnes
Lynton & Barnstaple Railway.....	53 tonnes

At that meeting, it was established that railways were paying in the region of £120-180 per tonne of coal. Howard says: "This is a wide variation; however, several factors affect the price, from size of delivery, speed of payment etc. Prices have not really changed significantly over the past ten years; they have moved upwards and then back down, but have remained almost within that price range."

As outlined above, the NYMR is one of preservation's biggest consumers of coal. General Manager Chris Price says: "We used

to burn 3,000 tonnes a year, but this has reduced to about 2,500 since we made changes to our off-peak timetables.

"We spend about £300k a year on coal at present prices, but it has been over half a million in the past. It represents roughly 5% of our total costs (including capital spending, direct and indirect costs) of running the railway every year. If this increases dramatically then we would probably look at reduced capital investment, but if it was to continue in the long term, it would obviously force business change."

His sentiments are echoed by former Kent & East Sussex Railway Chairman Ian Legg: "We use about 900 tonnes a year and the coal budget is about 5% of our costs. We pay around £160 per tonne (including haulage) and use about £95,000 worth of coal a year.

"This has gone up quite a lot in the last year as coal of sufficient quality has become more difficult to source. We would not be surprised if this price continues to rise.

"Some of the larger railways' bills are about five times larger than ours. If the price doubles, or even triples, this will naturally reduce our operating profit (to close to zero) and the amount we can therefore invest. If the price were to rise significantly, that would definitely eat into the cash available for restoration projects. Clearly, we will need to address this risk."

Steve Oates says: "No one knows how coal prices might be affected, so this creates some uncertainty among member railways.

Various figures have been suggested, ranging from rises of around 50% up to 200%, 300%, 400% or above current prices.

"Take a hypothetical scenario of a railway with a turnover of, say, £2 million, which uses, say, 250 tonnes per year. Assuming they buy at £180 per tonne, their spend will be £45,000, representing about 2.25% of turnover. If their coal cost doubles, it then moves up to around 4.5% of turnover, quite possibly wiping out much or all of any annual profit/surplus generated.

"Transfer this scenario to railways large and small, and railways will be faced with a significant financial burden which some may struggle to afford."

**DEFRA's proposals are aimed at reducing particulate emissions. What environmental impact do steam railways have?**

The HFA says: "Although national consumption has dropped considerably in the last ten years as traditional power stations have closed, it is estimated that 8,000 tonnes of particulate matter are emitted each year. By contrast, according to DEFRA, those emitted by combustion of heritage coal use do not exceed 40 tonnes a year – just 0.5% of the total."

In other words, railways have minimal environmental impact. That is not to say, however, that preservation should be brazen in its attitude towards coal-burning.

Steve Oates says: "With international focus on environmental issues and a changing attitude among the public to pollution, we also advised members of the importance of getting our PR right.

"For example, images on websites and in steam preservation magazines showing locomotives belching out black smoke are no longer acceptable, and we need to be aware of the Green Party's – and others' – stances which are gaining traction, both on coal and on 'polluting for pleasure'."

**Where does this leave us, and where do we go from here?**  
The first question is easier to answer. It is clear that preservation is facing some serious challenges in coming years. The effects of

DEFRA's revised Clean Air Strategy and plans to phase out the sale of sized, lumped coal for household use will not be felt immediately, but the signs point to inevitable change on the horizon.

The day may well come when British engines no longer burn British coal and are entirely reliant on imports, as domestic production of suitable steam coal comes to an end. It is too early to predict what coal prices will be, where the coal will come from and of what quality it will be; until DEFRA publishes the formal response to its consultation, nobody will have a definite answer.

The industry is sufficiently concerned about the legislation that it is lobbying the Government to not only protect our right to burn coal, but also ensure that the production, supply and distribution chain necessary to transport coal to bunkers and tenders across the country remains intact.

However, we cannot have a blinkered attitude. This issue affects all heritage coal-burning institutions, not just railways and steam locomotives. Traction engines, stationary engines, steam boats, miniatures... all could be adversely affected by DEFRA's plan to phase out the sale of domestic coal.

We must stand together and present a united front to combat what could be the greatest threat to preservation in its history.

As to where we go from here, that is a complicated question that warrants a complex answer. We will be looking at how the preservation movement is responding to this impending crisis in the next issue of *Steam Railway*. [SR](#)

**BR Standard '7MT' No. 70013 *Oliver Cromwell* departs Loughborough, on the Great Central Railway, on December 26. PHIL WATERFIELD**

