

THE MIKADO MESSENGER



2007 PRINCE OF WALES
Building Britain's Most Powerful Steam Locomotive



A 'Flying Mikado' (aka No. 2007 *Prince of Wales*) awaiting her wheels being 'fitted beneath' - A1SLT

Welcome to edition No. 65 of *The Mikado Messenger*, our monthly eNewsletter which aims to provide a regular progress update on the construction of new Gresley class No. 2007 *Prince of Wales*.

Thanks to our supporters' continued generosity, over £3.5m has now been donated or pledged - this equates to 70% of the required £5m.

We are following Government guidelines with regards to the coronavirus, and whilst our office-based staff are now working from home, our workshop staff are continuing to work at Darlington Locomotive Works where they are taking all necessary precautions. However, as many of our supporters and volunteers are from vulnerable groups, the Works is currently closed to non-essential staff.

In addition, Nene Valley Railway have had to cancel all their events until the end of May 2020 so this means we can no longer hold the P2 Roadshow on Saturday 23rd May 2020 and the Supporters' and Tornado Team day on Sunday 24th May 2020. We are sorry to have to make these changes. We hope you understand that the circumstances are beyond our control and the restrictions are very necessary at this challenging time.

As a small charity we value your continued support and hope that you will be able to spend time and travel behind *Tornado*, and visit DLW to view our progress with *Prince of Wales*, in the not too distant future. We will of course be reviewing all our activities on a frequent basis to protect everyone involved with the Trust and to secure our long-term future. Please keep an eye on our website and Facebook pages for updates or call 01325 460163 or email enquiries@a1steam.co.uk if you have any questions.

FUNDRAISING

A P2 for the price of a pint of beer a week: around 930 supporters have signed up as Covenantors for No. 2007 *Prince of Wales*, from as little at £2.50 per week, and are now kindly donating over £205,000 annually including Gift Aid. We aim to reach 1,000 regular donors by the 2020 convention, in September. If you haven't yet signed up as a Covenantor we would encourage you to get on-board. You can find more information [here](#).

The Motion Club has now welcomed 162 members, with only 13 places remaining of our 175 members target. You can find more information about The Motion Club [here](#) - help us to fund the manufacture of No. 2007's motion!

The Boiler Club has hit the 189 members mark, leaving just 111 spaces available. As we have now placed our order for the boiler, we would urge those who haven't yet contributed towards the purchase of No. 2007 *Prince of Wales*' boiler to join us. This is the single most expensive component on the locomotive and is due to be delivered to Darlington Locomotive Works (DLW) in July 2021. More information about The Boiler Club can be found [here](#).

Our newest club, **The Tender Club**, is filling up with 63 places already taken. In order to keep on schedule to complete No. 2007 within three years, the tender frames and tender tank are being delivered to DLW in 2020. Our target for The Tender Club is 250 members, contributing £1,500, so if you would love to contribute towards the tender more information can be found [here](#).

You can sponsor No. 2007 *Prince of Wales* components from as little as £25 ranging up to £15,000! The **Dedicated Donations** scheme has already raised over £400,000. If you would like to sponsor a component, please email dedicated.donations@p2steam.com, detailing the amount you would like to donate and/or if you had a specific part of the engine in mind, we will then send you some component recommendations to suit your donation.

To-date, over £2.1m has been spent, £2.7m raised and £3.5m pledged of the required £5m to complete No. 2007 *Prince of Wales* within the next three years.

ENGINE FRAMES UPDATE



Cartazzi wheelset and spring plank assembly; pony truck frame fabrication - A1SLT

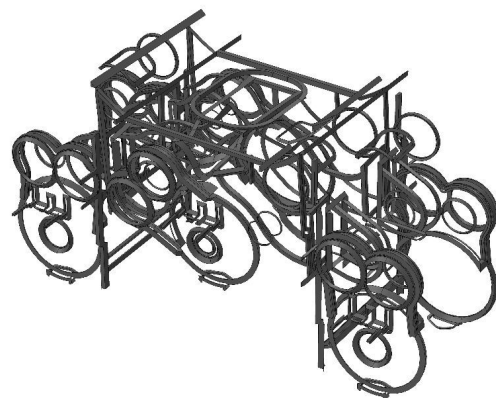
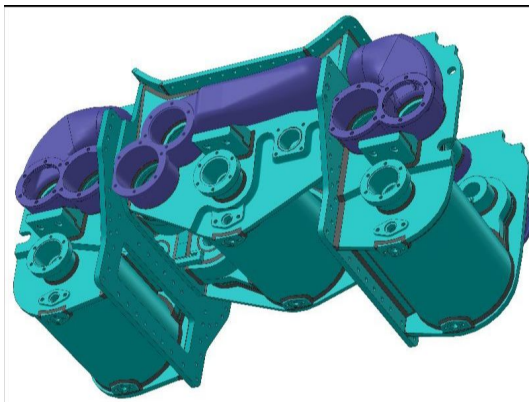
Summary: engine's frames erected; all major frame stays, brackets, horn blocks, axle boxes & buffers cast and fitted using around 1,000 driven bolts.

Progress update: North View Engineering Solutions (NVES) in Darlington continue to make progress with the pony truck frame; detailed measurements have been made with the Cartazzi wheelset and spring guides in the hornblocks to check clearances between the axleboxes and hornblocks and measure the clearances between the spring guides and the upper parts of the hornblocks; a special back-countersinking tool is being made to enable the last three holes in each of the outside motion brackets to be countersunk in situ. The use of countersunk bolts in this area is necessary to avoid fouling the backs of the leading coupled wheelset tyres.

Next steps: the final bolts to attach the outside motion brackets to the frame will be fitted; the Cartazzi spring guides will be sent away to have their 11-14% manganese steel liner plates welded on.

Fundraising: The Founders Club was established in September 2013 to give the project a racing start and get it to the point of erecting the engine's frames with a target of raising £100,000 plus Gift Aid from 100 supporters each donating £1,000. The Founders Club closed in July 2014 having attracted 360 members and raised around £450,000.

CYLINDERS UPDATE



Cylinder block 3D CAD image, as at present, and an interesting view of the welds that will be used-

David Elliott/A1SLT

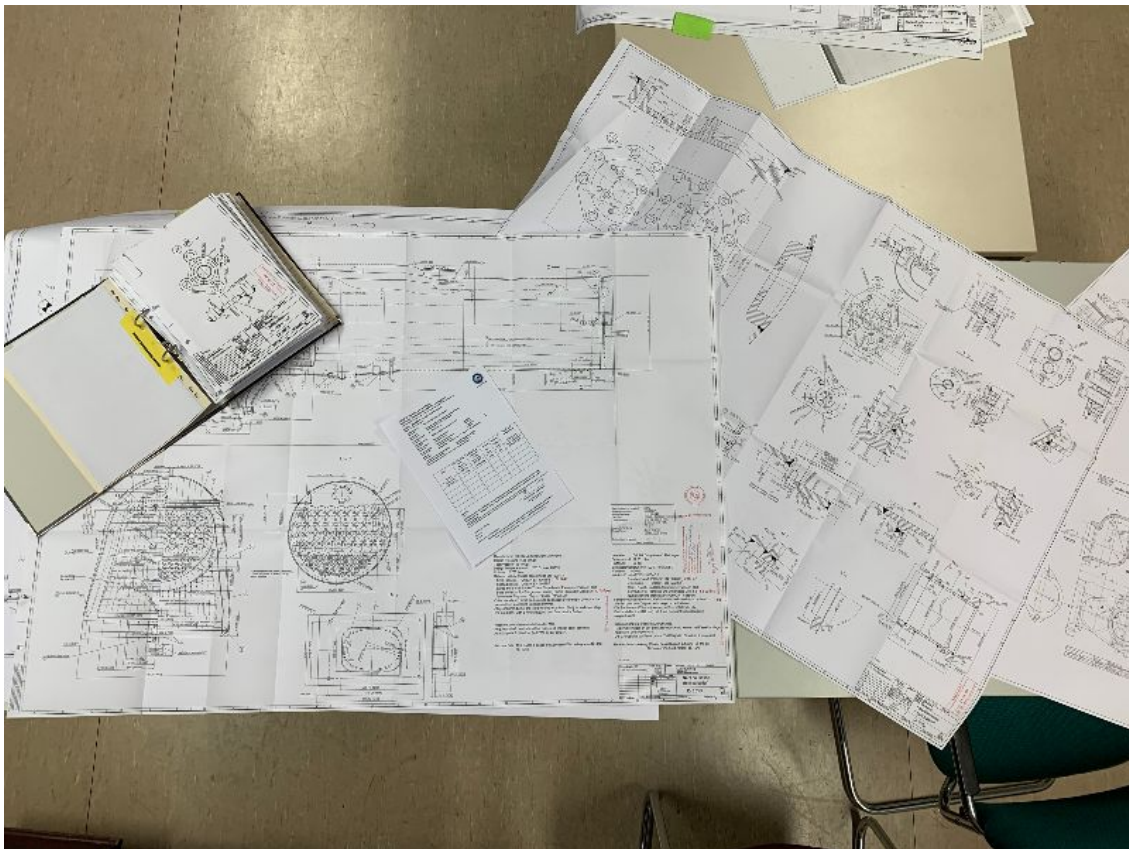
Summary: design studies into cylinder block manufacture and selection of valve gear complete; 3D CAD design of the cylinder block and valve gear substantially complete; further progress has been made in applying the weld details to the cylinder block inside exhaust passages with particular attention being paid to the order of fabrication to ensure that all welds can be completed properly.

Progress update: Alan Parkin has rebuilt the 3D model of the cylinder block to make it more manageable - the total file size is now over a quarter of a gigabyte; the finished block will weigh approximately five and three quarter tons and will include a quarter of a ton of weld!

Next steps: creation of detailed 2D manufacturing drawings for the cylinder block.

Fundraising: The Cylinder Club was founded in October 2017 to fund the redesign and manufacture of the cylinder block with a target of raising £100,000 plus Gift Aid from 100 supporters each donating £1,000. The Cylinder Club closed in March 2018 having achieved its target.

BOILER UPDATE



The updated dated boiler designs - *Christopher Wörfel, DBM/A1SLT*

Summary: boiler design study completed; forged foundation ring corners manufactured & machined; regulator castings delivered; superheater header cast & machined; boiler cladding manufactured, trial fitted to frames and now in storage; boiler order placed with DB Meiningen (DBM) for delivery in July 2021; foundation ring forgings and regulator castings dispatched to DBM; the minor re-design of the banjo dome to suit the P2 cladding by has been completed by DBM; good progress has been made with producing two sets of superheater elements and procuring basic components which are not affected by any design changes including the firebox tube plate and firehole door pressings.

Progress update: DBM's notified body TÜV has approved the updated design for the boiler(s) which enables commencement of manufacture of the diagram 118a specific components.

Next steps: once we have received the approved drawing set it will be sent for information and comment to various UK bodies including the Office for Rail and Road (ORR), Network Rail, our insurers and our Assessment Body.

Fundraising: The Boiler Club was founded in October 2017 to fund the design modification and manufacture of the boiler with a target of raising £600,000, plus Gift Aid, from 300 supporters each donating £2,000 in up to 40 payments of £50. As of today, The Boiler Club has attracted 189 members who have generously donated over £470,000. For further information click [here](#) - we must reach our 300 members target by July 2021 at the latest.

WHEELSETS UPDATE



Ian Matthews grinding off the balance weight rivets on the intermediate wheelset- A1SLT

Summary: study into ride & suspension completed using Vampire®; software; crank axle re-designed to comply with modern standards, approved and manufactured; all engine wheelsets complete and trial-fitted to engine; a full drawing set for the pony truck frame has been produced and checked.

Progress update: the final set of balance weight plates have been riveted to the intermediate coupled wheelsets; the coupled wheel cannon boxes are having some additional machining carried out to enable the spring links to be fitted. During the trial fit it was found, as is often the case with castings, that the area where the spring links fit together the material is thicker than the drawing dimensions which is causing them to foul the spring links.

Next steps: machining work as described above; preparation for balancing the smaller wheelsets.

Fundraising: The Mikado Club was founded in March 2016 to wheel the engine with an initial target of raising £200,000, plus Gift Aid, from 160 supporters each donating £1,000. This was extended in May 2017 (to also wheel the tender) to 200 supporters raising £250,000 plus Gift Aid. The Mikado Club closed in May 2018 having achieved its target.

MOTION UPDATE



Four coupling rods after the initial boring of rod eyes to reduce the maximum thickness of the material to ensure the required mechanical properties achieved during heat treatment- *Robert Stephenson/ A1SLT*

Summary: all heavy motion ordered from order with Stephenson Engineering Ltd of Atherton, Manchester; work started with first delivery due in autumn; updated poppet valve gear design almost complete with first components in manufacture.

Progress update: the initial batch of the four coupling rods, pictured above, have been heat treated.

Next steps: machining the middle and rear coupling rods and forging the leading coupling rods.

Fundraising: The Motion Club was founded in May 2018 to fund forging and machining of the heavy motion, with a target of raising over £210,000 including Gift Aid, from 175 supporters each donating £1,000 in up to eight payments of £125. As of today, The Motion Club has attracted 162 members who have generously donated around £200,000. For further information on how to become a member and help us to reach our target before the convention click [here](#).

TENDER UPDATE



The tender tank being grit blasted at MIS North East; the tank arriving at DLW - *David Elliott/A1SLT*

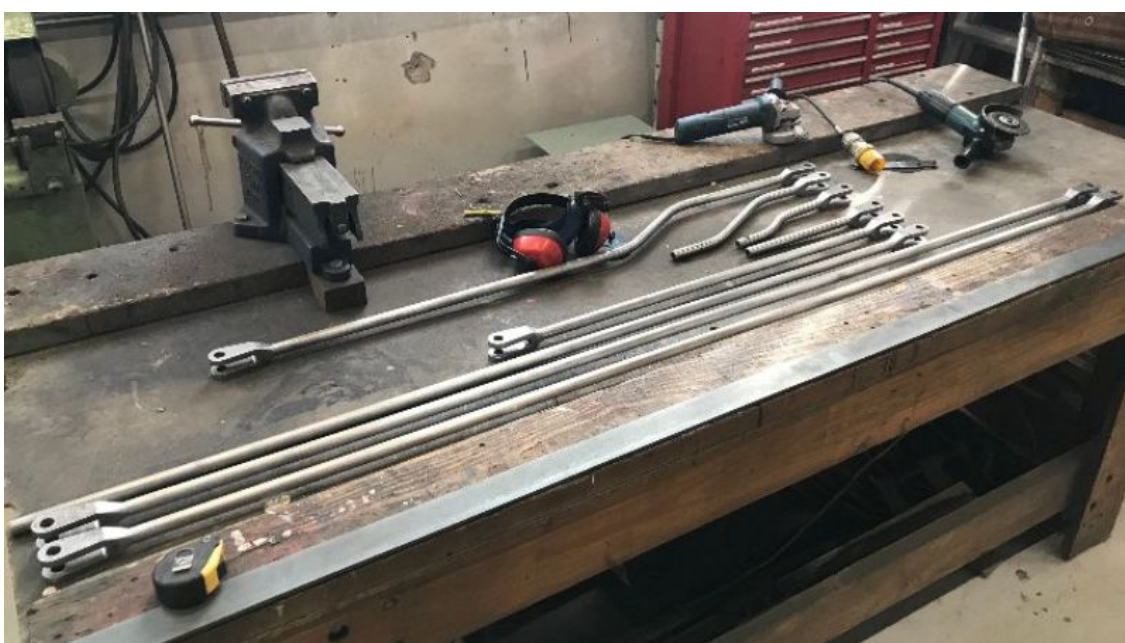
Summary: axlebox and other tender castings produced by William Cook Cast Products; frames being assembled by ID Howitt; tank construction under way by NVES; tender wheelsets assembled by South Devon Railway Engineering and returned to Darlington Locomotive Works (DLW).

Progress update: the tender tank is structurally complete and has passed its water test; it has been grit blasted at subcontractor MIS North East, Peterlee and was delivered to DLW on Monday 23rd March.

Next steps: filling and priming of the tender tank's exterior surface; welding on and machining of manganese liners on the tender hornblocks; machining of axleboxes by I D Howitt.

Fundraising: The Tender Club was launched in April 2019 to fund the construction the tender, with a target of raising £450,000, including Gift Aid, from 250 supporters each donating £1,500 in up to eight payments of £125. As of today, The Tender Club has already attracted 63 members who have generously donated over £115,000. For further information on how to become a member click [here](#).

MISCELLANEOUS FITTINGS





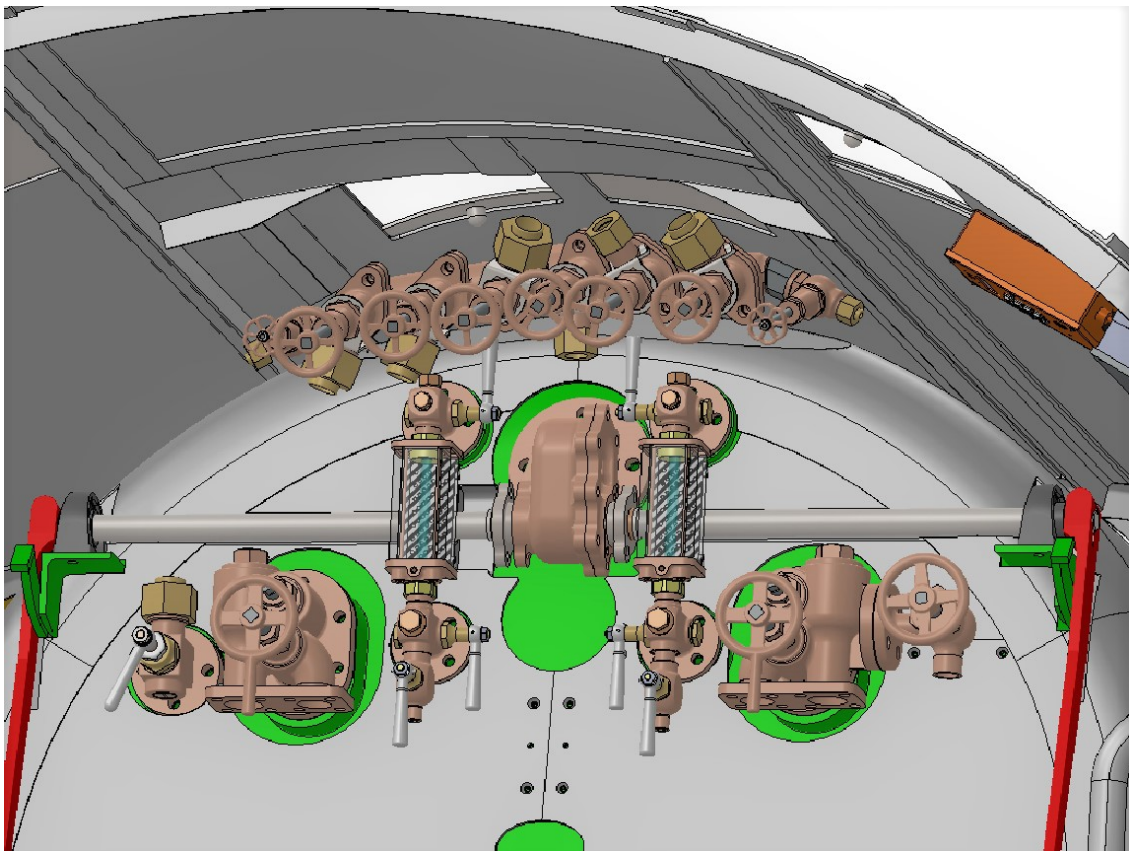
Cylinder drain cock linkage and rod ends- *Bob Hughes/A1SLT*

Running Gear

Summary: the conceptual and detailed design of the cylinder drain cock operating gear has been completed by Alan Parkin.

Progress update: Ian Matthews and Edward Laxton have been machining many detailed parts for the cylinder drain cock operating mechanism and Ian has produced pull rod and mounting bracket sub assemblies.

Next steps: continue to manufacture cylinder drain cock details and start to fit them to the frames.



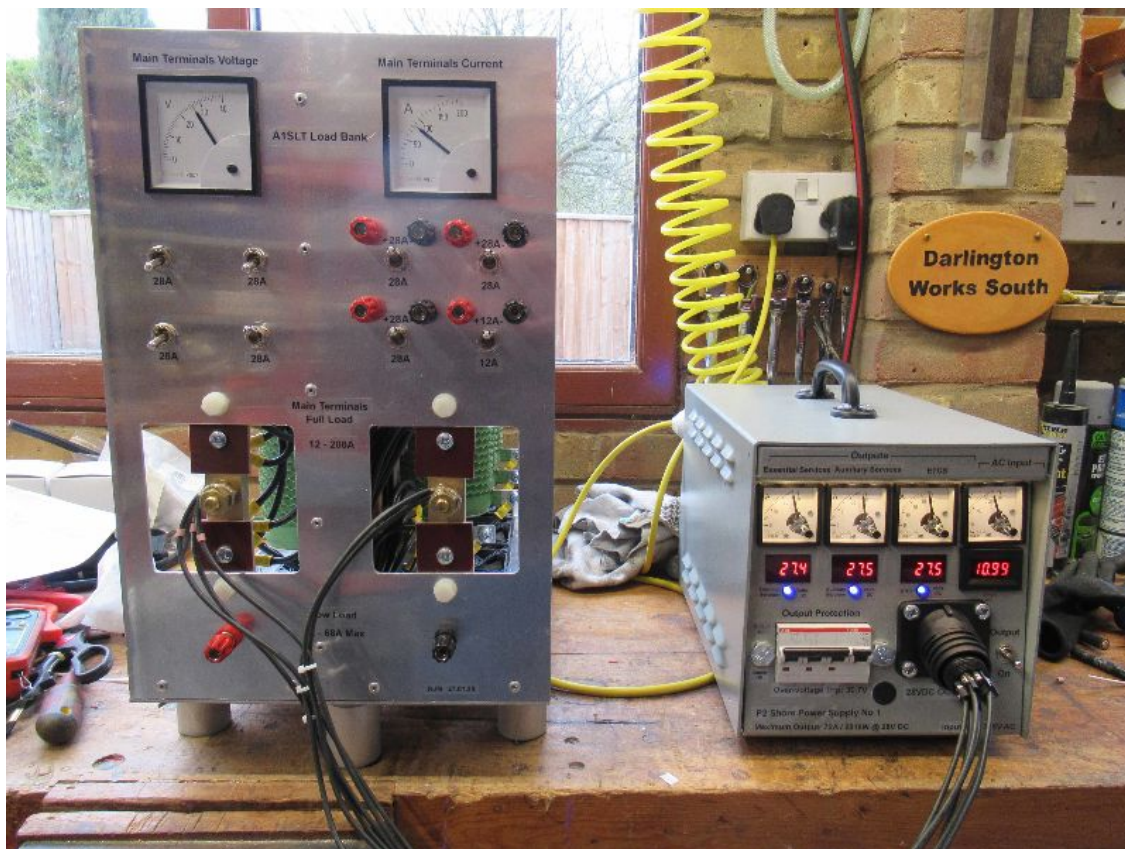
The steam stand pipework- *Alan Parkin/A1SLT*

Pipework

Summary: the design is well advanced and installation under way.

Progress update: Alan Parkin has drawn, in 3D CAD, the steam and air pipework and fittings for the air pumps.

Next steps: continuation of design of pipework details, ordering of long lead items.



The new P2 shore power supply and the ADA load bank on soak test - A1SLT

Electricals

Summary: significant progress on design and manufacture of electrical system; belt driven tender alternator nearing completion, turbine wheel for steam turbo alternator manufactured.

Progress update: the load bank for testing the new axle driven alternator is now complete and has been tested up to 80A using the new shore power supply. The load bank has a maximum capacity of 208A at 28V DC.

Next steps: We will now perform 'soak testing' on both pieces of equipment to prove their resilience. Meanwhile, detailed design work is now in progress. The current focus is on the essential services I/O panel, which takes in power from available sources and distributes it to essential systems around the locomotive. Once this is complete, and checked, we will move on to the auxiliary services I/O panel, which feeds power to frame and cab lighting and other non-essential systems.

Fundraising

The Dedicated Donations scheme was founded to fund numerous components including the non-ferrous fittings and has raised over £400,000 to-date with new parts being frequently made available for sponsorship. For further information, click [here](#).



Progress on No. 2007 *Prince of Wales* - Mandy Grant/A1SLT

No. 2007 *PRINCE OF WALES* EVENTS

P2 Roadshows, Open Days at DLW and Presentations

In the light of Government advice to prevent the spread of coronavirus covid - 19, we have suspended our

- P2 Roadshow programme.
- Open Days at Darlington Locomotive Works, usually held on the first and third Saturday of the month
- Presentations

We will be reviewing whether or not to go ahead with each planned future roadshow and are also investigating an on-line substitute - please keep an eye on our website for the latest updates. We hope to be able to restart the programmes as soon as it is safely possible. Thank you for your patience.

VOLUNTEER

As ever, we are looking for more volunteers. It takes a lot of people to both keep *Tornado* on the main line and also to build *Prince of Wales*. There is always so much more that we can achieve with the right volunteers, with the right skills and can-do attitude. If you have a passion for fundraising or engineering please do get in contact. For more information, please email our [volunteers coordinator](#).

TRAVEL WITH *TORNADO*



No. 60163 *Tornado* passing Beeston Castle, December 2019 - John Halliwell/A1SLT

For more information on *Tornado's* 2020 Raitour programme click [here](#) or call Tornado Raitours on 01325 488215. The Trust respectfully requests that anyone wishing to see *Tornado* follows the rules of the railway and only goes where permitted.



Facebook



Twitter



Website



Email

Copyright © 2020 The A1 Steam Locomotive Trust, All rights reserved.

Our mailing address is:

The A1 Steam Locomotive Trust, Darlington Locomotive Works, Hopetown Lane, Darlington. DL3 6RQ