

Autumn 2019

Joint Review of Autumn Preparations and Delivery

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1. Executive Summary

This year a significant number of workstreams were undertaken jointly by Transport for Wales Rail Services (TfWRS) and Network Rail (NR) in order to improve delivery of the Autumn season for 2019. Incorporating learning from the challenging 2018 Autumn season, greater investments were made across the industry which included the following key areas:

- Wheel Slip Protection (WSP) fitment programme for all Class 150 units;
- Introduction of a dedicated TfWRS Seasonal Planning Manager;
- Wheel lathe overhauled and increase in number of trained operatives;
- Additional 'Autumn Response Teams' recruited.

As a result of the extra investment and commitment from our organisations, improvements were observed in the following key areas:

- No wheel-flats on WSP equipped class 150 units;
 - Average time for tyre turning activities at **1.5 days**;
 - A **57% reduction** in trains being damaged this year compared to last (76 v 170);
 - Proactive site inspections increased from 178 to **2,498**.
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2. Introduction

This report has been jointly compiled by Transport for Wales Rail Services (TfWRS) and Network Rail (NR) in order to provide an update on the delivery of the Autumn 2019 season.

Following considerable disruption in 2018, several investigations were commissioned by both organisations to identify all potential causes. The reports suggested a number of recommendations to prevent similar levels of disruption reoccurring in 2019.

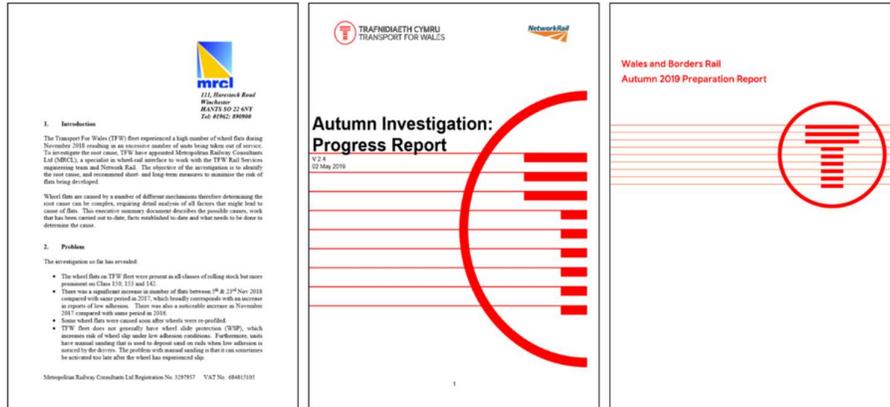


Figure 1 from left: Independent investigation report, progress report and preparation report

Several key workstreams were developed in order to build on the recommendations, in addition to lessons learnt from previous years. These workstreams were outlined in the *Wales and Borders Autumn 2019 Preparation Report* (TfW, 2020), for which this document will provide supplementary information on the delivery of these preparations.

3. Key Workstreams

3.1 Joint Autumn Plan

The joint preparations for autumn 2019 followed established industry processes and incorporated learnings from independent Autumn investigations and national recommendations. All key activities were summarised into the Joint Autumn Plan which was jointly signed by TfWRS and NR and would later provide focus to all stakeholders invested in delivering the Autumn season against the plan.



Figure 2 Signed Front Cover from Joint Autumn Plan 2019

3.2 Joint Autumn Control

This year, TfWRS employed a member of staff who was fully integrated into the Autumn Control team throughout the season. They undertook full duties and ensured all data was collated accurately and in a timely manner. This was especially useful during times where the workload increased due to prevailing weather conditions.



Figure 3 Joint Autumn Control based at Wales Railway Operations Centre

TfWRS will be looking to build on the success of this approach in the upcoming Autumn season for 2020.

3.3 Wheelset Management Plan

Ahead of the Autumn season, TfWRS ensured all units had at least 6 months wheel wear available. This is the equivalent to approximately 2 tyre turns providing some contingency to ensure units could be available for service.

Additionally, spare wheelsets were purchased for all TfWRS fleet types including our Class 14X (Pacers) trains. Before the season began, the supply chain had limited access to Pacer wheels as the traction type was planned to be phased out. A robust pacer protection plan was developed in order to minimise the impact of limited spares, though supplies were on hand at the start of November.

Throughout the Autumn season, we had no incidences of units being stopped due to non-availability of wheelsets.

3.4 Road Transport Provision

During the Autumn period road transport was mobilised by TfWRS in order to protect customer service levels and provide alternative transport where the impact of the season created the necessity. Proactive action included six full size coach standbys located at Cardiff Central every weekday between 19/11/19 – 06/12/19 to enable a rapid response to disruption during the PM peak.

Road transport was also a key element of our fleet availability contingency plan, when weather conditions affected the safe operations of trains. The plan would be deployed providing customers with various journey options. Aside from this planned activity, our control team employed road transport provision in order to maintain service levels throughout the season.

3.5 Dedicated Seasonal Planning Manager

In August 2019, TfWRS recruited a new Seasonal Planning Manager (SPM) to oversee all preparations for each of the seasons that affect the railway. This created new opportunities to work closely with Network Rail's established dedicated Seasonal Manager.

A new seasonal planning framework, action tracker and high-level visualisation board were quickly developed and introduced to assist with the final preparations for the Autumn Season.

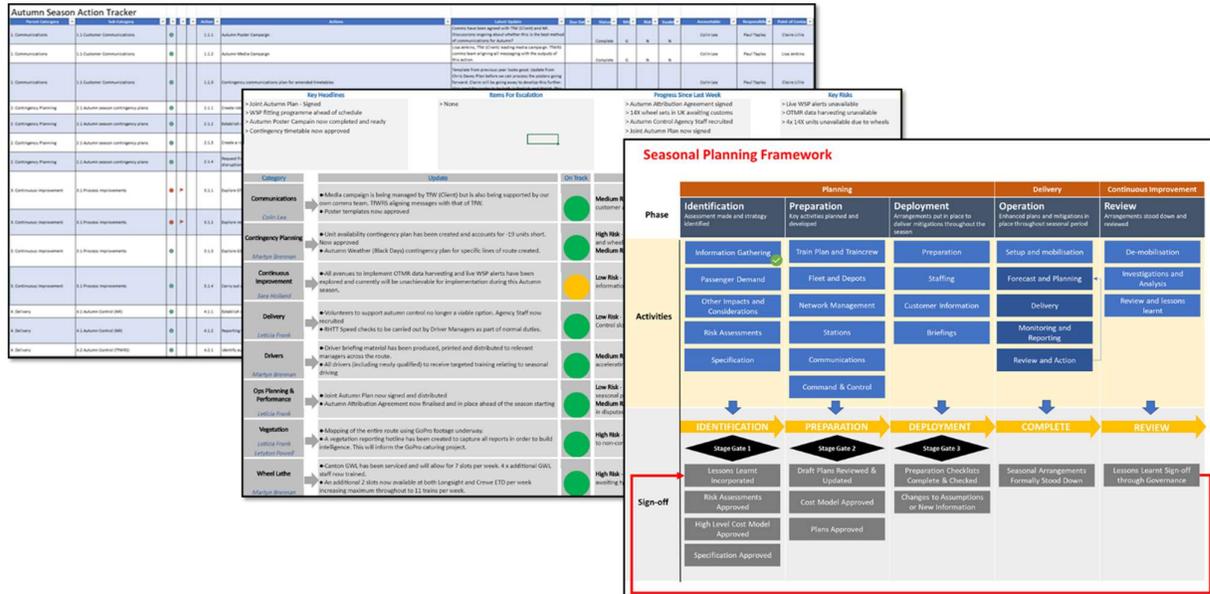


Figure 4 from left to right: Action Tracker, Visualisation Board & Framework

Throughout the Autumn delivery period, a new daily TfWRS dashboard was created which tracked key performance indicators (KPIs) including wheel lathe capacity, fleet availability, WSP programme and PTL score. This complimented NR's newly developed Power BI daily & weekly reports which ensured TfWRS and NR had short interval checks in place to provide assurance that the plan was being delivered.

3.6 Wheel Slip Protection (WSP) Programme

A key mitigation to reduce the potential for wheel flats to develop on Class 150 units, TfWRS committed to retrofitting all 36 of its Class 150 units with WSP and auto sanding equipment. The original aspiration was set to complete this project ahead of the Autumn Season, however, unforeseen challenges with jacking equipment delayed the start of the programme resulting in the completion date slipping to November.

By the end of November, all planned Class 150 units in service had successfully undergone fitment of this technology (33 units). The remaining 3 units were planned to be out of service for the duration of the Autumn season due to 2 units undergoing 'Persons with Reduced Mobility' (PRM) modifications and 1 unit on long term stop as a result of a significant tree strike.

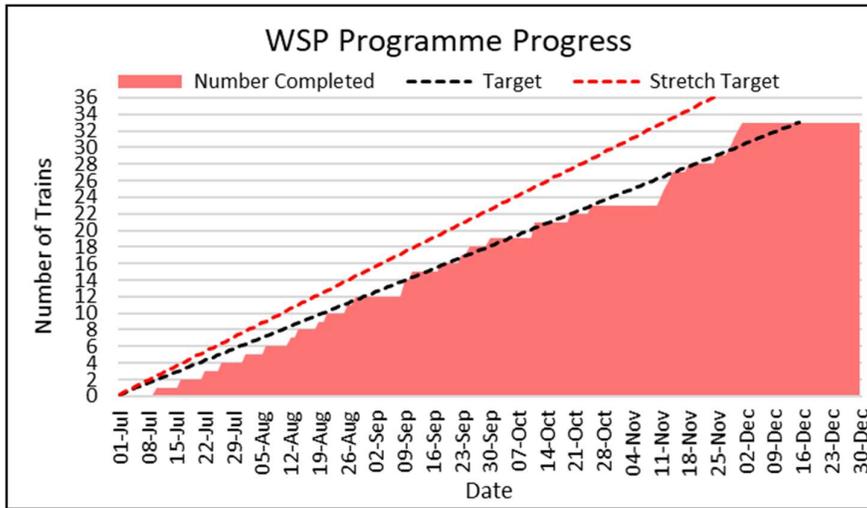


Figure 5 WSP Programme Progress Chart

The success of this programme can be quantified by the number of Class 150 units suffering wheel flats. This year, **10 units developed wheel flats, compared to 84 units in 2018**. This equates to an 88% reduction which contributed to an overall reduction of wheel flats observed across all fleet types. It is worth noting that the 10 units involved were not fitted with WSP at the time wheel flats occurred.

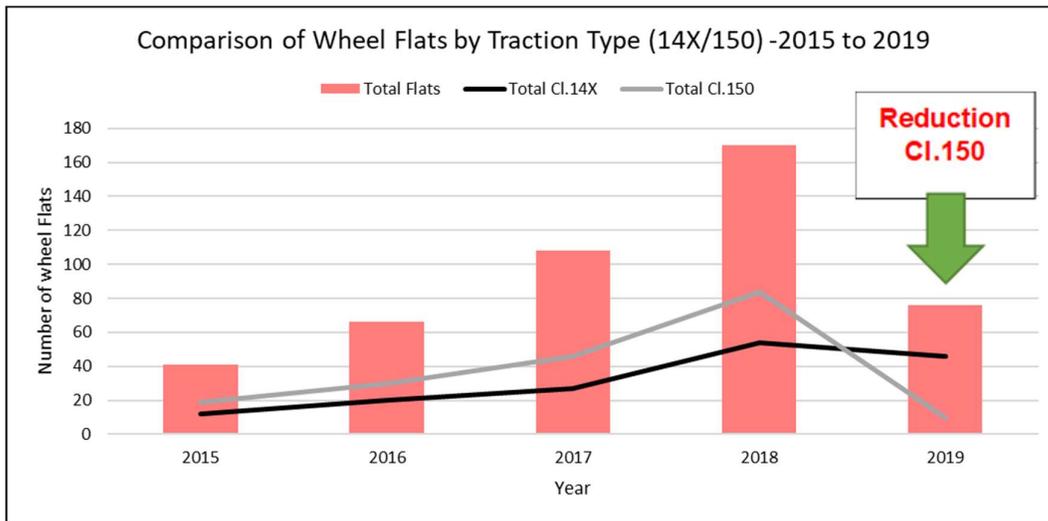


Figure 6 Chart showing number of wheel flats developed over last 5 years

3.7 Traction Gel Applicators (TGAs)

Ahead of the 2019 season, 18 of 65 Traction Gel Applicators (TGAs) were upgraded to the latest technology (Mk3 units) to replace the older, obsolete Mk1 units. In addition, an enhanced inspection plan was deployed to aid early identification of faults and safeguard the operational effectiveness of this lineside mitigation. Overall performance was consistent throughout the season with a reduced equipment-related failure rate.

3.8 Wheel Lathes

Ahead of the Autumn season, the main wheel lathe, based at Canton Depot underwent an overhaul (for the first time in 35 years) at a cost of £120k. This along with a robust capacity plan led to the successful delivery of tyre turning activity where there were no incidences of ‘bottle necking’ which results in units being stopped for longer than necessary.

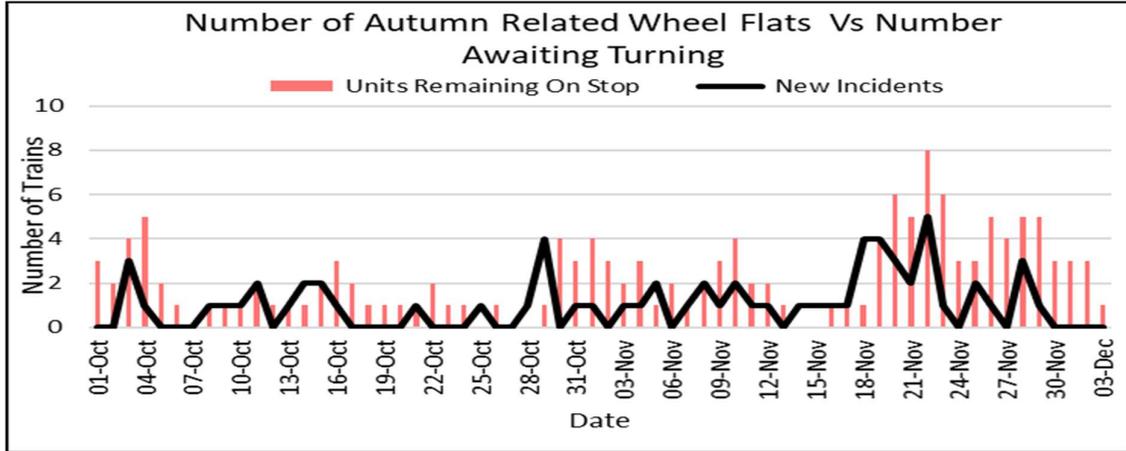


Figure 7 Chart showing number of units stopped for wheel flats vs awaiting tyre turn

The above chart (figure 4) shows the demand for tyre turning between the 1st October and 3rd December. Throughput is observed as being steady throughout the season, though at the beginning of November, severe flooding trapped a small number of trains which prevented them being turned within the usual 2 days, but these were quickly recovered.

Therefore, TfWRS preparations for the wheel lathe this year are deemed to have been a success.

3.9 Autumn Contingency Plans

Working jointly with Transport for Wales, with early approval, a robust contingency plan was developed to mitigate the impact on passengers during times of fleet unavailability. These plans included an ‘off-the-shelf’ response followed up by a customer communications campaign.

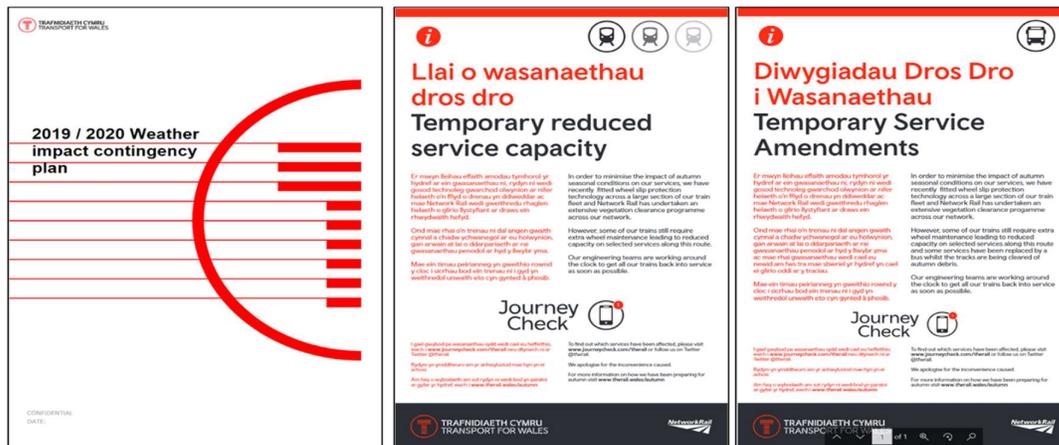


Figure 8 Example of posters for Customer Communications

3.10 Operational Readiness

This year, TWRS and NR jointly created a new seasonal risk guide which was distributed to all operational staff including Drivers, Signallers, Mobile Operations Managers and Train Guards. This is the first time this approach was trialled which received positive feedback and therefore will be something we will look to implement in future seasons.

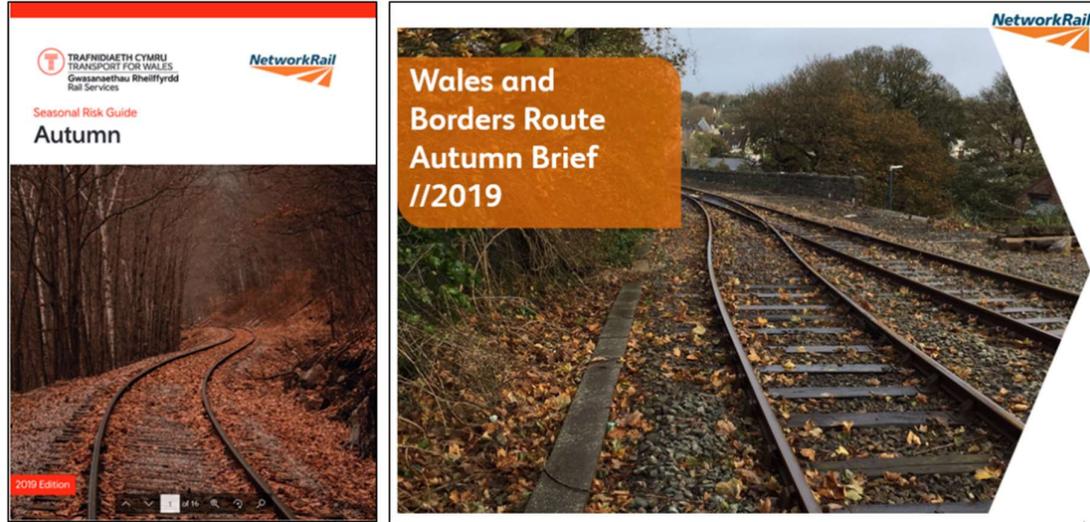


Figure 9 Examples of communications documents issued to all operational staff

3.11 Vegetation Management

Vegetation management has been increasing year-on-year, and for 2019 ~2.7m sqm were managed through a range of work activities prior to autumn. Through the work of the 'Vegetation Management Joint Working Groups', 50 sites were initially identified for low adhesion risk and included in the route vegetation management plan for completion by the end of October with a further 14 sites were later included in the plan. Funding was re-distributed, and an additional £850k was secured, enabling all 64 sites to be delivered as planned and provide greater focus on managing lineside vegetation in relation to the wider safety risk to trains and passengers.

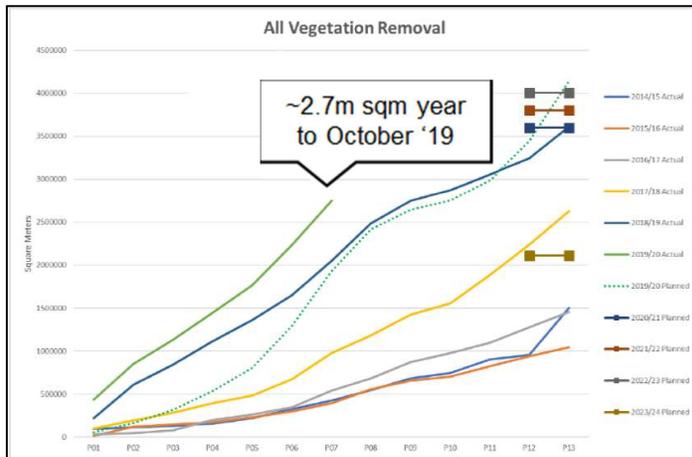


Figure 10 Chart showing current and planned vegetation clearance volumes (2014-2024)

Work is underway to identify the low adhesion risk sites for completion prior to autumn 2020 with TFWRS support and initiatives helping to improve intelligence on the condition of lineside vegetation and assist with planning management works.

3.12 Rail Head Treatment Train (RHTT) programme

The approach for treating the rail head this year built on the success of the 2018 programme and additionally included supplementary treatment using adhesion modifier at several strategic sites. The overall delivery of the RHTT programme was hampered by frequent water jetting equipment failures which resulted in 11% loss of planned treatment miles, equating to approximately 4,800 miles.

The RHTT programme failed to meet the level of performance we have come accustomed to in previous years and work to identify the causes and address the issues is underway and the suppliers have been tasked with developing an improvement plan to provide assurances ahead of the 2020 season.

3.13 Frontline Practitioners

In 2019, NR invested an additional £600k on 12 dedicated 'Autumn response teams', which were deployed at 6 strategic locations across the network to enhance response capabilities and improve intelligence on emerging risks. The provision of this additional resource resulted in a 1300% increase in proactive inspections (2498 in 2019 v 178 in 2018) enabling mitigation activities to be more proactive and dynamic, consequently helping to minimise operational incidents and deliver a safer and more reliable service for our passengers.



Figure 11 Picture shows Autumn Response Team undertaking proactive inspection.

4. Conclusions

Following a joint post season review, each of the above workstreams were analysed to determine their effectiveness and whether they should be embedded into future seasonal preparation plans.

Some key statistics include:

- A **57% reduction** in trains being damaged this year compared to last (76 v 170)
- Proactive site inspections increased from 178 to **2,498**
- **C.10,000** fewer autumn related delay minutes compared to 2018 (a 35% reduction)
- Zero wheel-flats on WSP equipped class 150 units
- A **32% reduction** on Reports of Low Adhesion (ROLAs) over 2018 figure

Based on the outputs from the post season review, this report concludes that the preparations and delivery of the 2019 Autumn season can be deemed an overall success, however opportunities exist to deliver further improvements to the RHTT reliability and reduce incidents of tree strikes, amongst other preparation activities.

5. Look Forward

The key to delivering a successful season depends on the quality of the plan and ongoing commitment from both organisations to deliver a safe and reliable service for our Passengers and Staff.

We will achieve this by continuing to implement established good practices and enhancing our capabilities through continued exploration and deployment of innovative technologies such as:

- **Automated Intelligent Video Review (AIVR)** – Designed to capture and categorise intelligence on lineside vegetation.
- **Microsoft Office 365** – Taking advantage of inbuilt tools such as MS Project and MS Teams to work collaboratively and efficiently.
- **Fibre Optic Acoustic Sensing (FOAS)** - Technology being developed to enable early detection of wheel flats
- **Live Train Telemetry Data** – Harvesting data from operational train systems to allow early intervention when issues are detected.

Finally, joint preparations for the Autumn 2020 season have already begun and we look forward to sharing these plans with the EIS committee in the near future.

6. References

Wales and Borders Rail Autumn 2019 Preparation Report | Transport for Wales. 2020. Publications | Transport for Wales. [ONLINE] Available at: <https://tfw.wales/transparency/publications>. [Accessed 15 January 2020].

7. Appendices

- i. Supplementary Information