

**Oliver Stewart**  
**RAIB Recommendation Handling Manager**



5 May 2023

Mr Andy Lewis  
Deputy Chief Inspector of Rail Accidents

Dear Andy,

**RAIB Report: Runaway of a road-rail vehicle at Belle Isle Junction on 16 May 2021**

I write to provide an update<sup>1</sup> on the action taken in respect of recommendations addressed to ORR in the above report, published on 12 May 2022.

The annex to this letter provides details of actions taken in response to the recommendations and the status decided by ORR. The status of recommendations 1 & 2 is '**Closed**'.

We do not propose to take any further action in respect of the recommendations, unless we become aware that any of the information provided has become inaccurate, in which case I will write to you again.

We will publish this response on the ORR website on 9 May 2023

Yours sincerely,

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<sup>1</sup> In accordance with Regulation 12(2)(b) of the Railways (Accident Investigation and Reporting) Regulations 2005

## **Initial consideration by ORR**

1. Both recommendations were addressed to ORR when the report was published on 12 May 2022.
2. After considering the recommendations ORR passed recommendation 1 to Hargreaves and recommendation 2 to Pod-Trak asking them to consider and where appropriate act upon them and advise ORR of its conclusions. The consideration given to each recommendation is included below.
3. ORR also wrote to the Rail Plant Association (RPA) asking them to bring the recommendations and learning points to the attention of its members.

### **Recommendation 1**

*The intent of this recommendation is for Hargreaves to fully identify and appropriately mitigate the risks associated with its on-track plant designs.*

Hargreaves should continue to review and revise as necessary its process and associated guidance for assessing the risks from its designs of rail plant, so that it specifically requires consideration of errors that may occur during operation and maintenance. This should include a requirement to update and revise risk assessments based on operational feedback and the contents of, and any changes to, operating and maintenance procedures.

### **ORR decision**

4. Having reviewed the initial response from Hargreaves, we requested detail of changes to documentation and how changes are captured in the continuous improvement regime. ORR carried out an inspection visit to Hargreaves on 15 February 2023 to discuss these points. Following the visit, Hargreaves provided a written update after the inspection visit setting out changes to the risk assessment process.
5. The update provided by Hargreaves on 24 February 2023 sets out the revised risk assessment process that has been introduced, which satisfactorily addresses the key points in the recommendation.
6. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Hargreaves has:
  - Taken the recommendation into consideration; and
  - has taken action to close it

**Status: Closed.**

### **Information in support of ORR decision**

7. On 14 September 2022 Hargreaves provided the following initial response:

*Since the creation of the Risk assessment circa 2014 the industry has changed a great deal, and as a company so has our Risk assessment procedures , During the RAIB investigation I shared our current practices with the Inspector, who acknowledged the level we are currently at, please see the Inspectors response detailed below, in short the recommendation was revised to that we will continue to review and revise our processes.*

*The following has been added to the report to reflect the work that Hargreaves has done to improve its approach to risk assessment:*

*Hargreaves reported that it has been developing its approach to the risk assessment of its designs and modifications, since the design of the DRWB system in early 2014 and believes that its risk assessment process is more rigorous than at the time of the design of the machine involved in the incident.*

*Additionally, the start of the recommendation has been revised to read:*

*Hargreaves should continue to review and revise as necessary its process and associated guidance for assessing the risks from its designs of rail plant, ...*

*As part of this continual improvement we are also adding a specific section to our risk assessment aimed at reviewing the maintenance activities and operational procedures*

*AJH have also Undertaken some formal Machinery Risk Assessment Training at the Health and Safety Laboratory which will help to further develop our processes.*

*This Training was undertaken on the 06/09/2022 with additional team members planned for the next available course*

*I hope this demonstrates that we have taken the recommendation seriously and shows that we have put in place mitigating actions to prevent a reoccurrence.*

7. On 24 February 2023 Hargreaves provided the following update:
  1. *The Technical Director has undertaken additional Risk assessment training at the Health and safety Laboratory in Buxton on 06/09/2022. This training has allowed Allan J Hargreaves Plant Engineers Ltd to develop its Risk assessment process in accordance with BS EN 12100 Safety of machinery — General principles for design — Risk assessment and risk reduction. The main outcome from this training was a change in the Scoring from a number based system from 1-10 to a multiple choice word based risk level system with an associated risk matrix, severity is now scored (Slight, Temporary, Permanent, Death) and occurrence scored (Remote, Unlikely, Likely, Very Likely), With only having 4 levels for each question it pushes the user further understand the outcome and select a higher or lower risk when the user feels the risk to be around 50%. An additional 2 employees will be undertaking this training as the team grows with the new employees expected to be in post at the beginning of April, and will have undertaken training within 4 months of their start date.*

2. A new Risk assessment document has been created called “TCD0074 – *GENERIC RISK ASSESSMENT TEMPLATE*” which will act as the foundation for all future risk assessments, it contains multiple tabs so the user is guided to review risks associated with each part of the Machine, the tabs are listed below (including Operation & Maintenance and Ergonomic Hazards). The front page gives guidance on how the document should be completed and the document is the process.

- *Front Page – Contains the Risk levels, Risk matrix, details about the machine and guidance for completing the document.*
- *Network Rail Prompts – Contains The Network Rail hazard prompt list that is used during product acceptance*
- *Mechanical Hazards – For the user to assess Mechanical hazards*
- *Electrical Hazards – For the user to assess Electrical hazards*
- *Thermal Hazards – For the user to assess Thermal hazards*
- *Noise Hazards – For the user to assess Noise hazards*
- *Material / substance Hazards – For the user to assess Material / substance Hazards*
- *Vibration Hazards – For the user to assess Vibration hazards*
- *Radiation Hazards – For the user to assess Radiation hazards*
- *Environmental Hazards – For the user to assess Environmental hazards*
- *Ergonomics Hazards – For the user to assess Ergonomics hazards*
- *Combination of Hazards – For the user to assess a Combination of hazards*
- *Pressure Hazards – For the user to assess Pressure hazards*
- *Operation & Maintenance – For the User to assess the Operation and Maintenance documentation for hazards*
- *NIR’s & Industry Feedback – For the User to Review historical NIR’s, Any previous feedback either internally, or from customers and operational use*

3. *When a user completes the Operation & Maintenance section of the document they will create a new line for each section of the manual then go through the operation and maintenance document and review each task / instruction for the risks associated with that task and any errors that could occur as a result of carrying out that task. The guidance for this is detailed on the front Page of the document and TCD0074 contains an example assessment.*

4. *For Operational, and Industry feedback section we have reviewed all the National Incident Reports (NIRs) associated with Rail Plant from the last seven years and entered them in TCD0074, We promote feedback from operation, use and maintenance internally through our employee suggestion scheme, Design Review forms, and with customers during Familiarisation training events. The Master document TCD0074 is then updated as new information is received and reviewed for its potential to affect any of our*

*existing designs and any mitigating actions as a result of the assessment will be created as a design review which enables tracking to ensure changes are followed through. During Design review sign off the user will check any changes to the Operation and Maintenance manual have been appropriately risk assessed.*

*All of the above actions are now complete and in place within our business having been used to assess a recently completed project where the process was refined as we went through the design build, commissioning and certification of the machine.*

## **Recommendation 2**

*The intent of this recommendation is for Pod-Trak to have a regime that provides it with a reliable understanding of the integrity of the direct rail wheel brake systems on its on-track plant, so that the machines only enter service with fully functional brakes.*

Pod-Trak should review its strategy for confirming the ongoing functional performance of the direct rail wheel brake systems on its on-track plant to confirm that it gives sufficient confidence in the integrity of the system throughout its time in service. This review should include consideration of the checks to be undertaken before vehicles are reintroduced into service following maintenance and inspection, the checks to be undertaken on an ongoing basis and any necessary pre-use checks. It should also identify and mitigate the risks associated with live testing. From the revised strategy Pod-Trak should issue updated procedures based on this strategy and brief them to relevant staff as part of their implementation.

## **ORR decision**

8. Having reviewed the initial response from Pod-Trak, we requested greater detail of the review and the justification for the engineering changes made in response. Pod-Trak provided an update setting out in greater detail the checks that are undertaken to all vehicles before being reintroduced into service following maintenance and inspection.

9. Having reviewed the update provided on 19 December 2022, we are satisfied Pod-Trak has an arrangement in place to ensure machines only enter service with fully functional brakes, consistent with the intent of the recommendation.

10. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Pod-Trak has:

- Taken the recommendation into consideration; and
- has taken action to close it

**Status: Closed.**

## Information in support of ORR decision

8. On 18 October 2022 Pod-Trak provided the following initial response:

*Pod-Trak raised the appropriate NIR 3768 relating to this matter.*

*Pod-Trak consulted a PAB using a third party company to fit a system that would not allow the machine to be left in an override position inadvertently. This would not require any changes to the base machine workings or any of the approved Hargreaves Direct Wheel Conversion. It was highlighted that in an override configuration the correct torque test figures can be achieved if the machine is switched off and the hydraulic pressure allowed to dissipate. If the machine is restarted the required torque figures can still be achieved in an override position unless other hydraulic circuits are activated i.e. travel, rail axles up/down or steering circuits.*

*The third party company, after consultation with a PAB, designed and fitted a system to stop the brake over ride valve inadvertently being left in the activated position. This consisted of a steel plate attached to the valve block and connected to an audible alarm. If the plate was removed to activate the override the alarm sounds. The valve must be returned to the closed position before the plate can be refitted. This did not affect the original direct wheel brake conversion or base machine workings. All Pod-Trak friction drive Mewp's had this system fitted.*

*Alan J Hargreaves Service Bulletin TCD0049 relating to the Direct Rail Wheel Braking system has been fully implemented and all Pod-Trak mewp's with this brake system have the relevant non -overridable spool (P/N 1001-4921) now fitted. This will not allow the braking system to inadvertently be left in an override position following maintenance and inspection. Interim third party manufactured and PAB approved system removed.*

*In addition to the manufacturers Technical Service Bulletin Pod-Trak have fitted a Brake pressure gauge to all Direct Rail Wheel Braked Mewp's. This was confirmed with Alan j Hargreaves as not affecting the original existing design and operation of the DRWB system. The gauge is in clear view of the machine operator when stood in basket and is a visual confirmation that brake pressure is present. The pressure gauge indicates brakes off if the machine is travelled in either direction and brakes on as soon no travel is selected. It also indicates brakes on as soon as the machine is started. In providing a visual indication of the brake pressure this also provides the operator confirmation that the DRWB system has pressure (not overridden) before the machine is on tracked for the required on-track brake test.*

*Operation staff have been briefed on all the aforementioned information.*

9. On 19 December 2022 Pod-Trak provided the following update:

*Please can you set out how you have addressed each of the following key points in the recommendation:*

### *1. A review of strategy for confirming the ongoing functional performance of the direct rail wheel brake systems.*

*Pod-Trak has reviewed the ongoing functional performance of the six Types 9B friction drive Direct Rail Wheel Braked (DRWB) Mobile Elevated Work Platforms (MEWP) within its fleet by monitoring the implications of AJH Direct Rail Wheel brake service bulletin (TCD0059) and the associated fitted parts with no issues. This review was undertaken by Managerial, Technical and Operational staff consisting of Simon Cofield, Head of Plant, Sam Snelson Professional Head and Andy McKinnell Senior Fitter. The review was not restricted to just the AJH converted OnTrack Plant, but also other items of On Track Plant within the Pod-Trak fleet that use Direct Rail Wheel braking systems. No functional performance issues have previously, or since been identified. All the required maintenance and operational brake tests have surpassed the figures required in the Original Equipment Manufacturer (OEM) maintenance documentation. In addition, Pod-Trak have retro fitted a brake pressure gauge to all their Type 9B (friction drive) DRWB Mobile elevated work platforms fitted with the Hargreaves DRWB conversion. This gauge immediately shows the presence of any ongoing functional brake pressure and is in clear view of the operator when they are operating the machine from the basket.*

### *2. That the strategy gives sufficient confidence in the integrity of the system throughout its time in service.*

*Pod Trak will continue to monitor and review the braking modification over the next 6m/12m period and report on any further development or issues at both the quarterly POS review and the yearly maintenance plan review (or before should the need arise) This is in line with the current Pod-Trak procedure document, OP23 Engineering Management of On Track Plant, Item 5, and the requirements stipulated within RIS-1530-PLT for all OTP Maintenance and documentation to be reviewed, approved, and authorised yearly. Pod Trak will continue to carryout quarterly torque testing throughout the life of the machine as part of the planned maintenance regime. These torque test results will be monitored and reviewed with regards to brake degradation or any loss of performance.*

### *3. Taking into consideration of the checks to be undertaken before vehicles are reintroduced into service following maintenance*

*All machine maintenance is conducted adhering to the AJH Direct Rail Wheel brake service bulletin (TCD0059) and additional checks relating to the integrity and operation of the brake pressure gauge. The requirements of the service bulletin and the fitting of the brake pressure gauge ensure a machine cannot be reintroduced into service following maintenance in an overridden position (I.E – DRWB's released) and provides a clear visible indication to the operator, that brake pressure is present. Pod- Track has determined that it will carry out the checks outlined in the AJH Direct Rail Wheel brake service bulletin (TCD0059) and as specified in AJH077 Mewp Rail wheel brake system and maintenance manual Issue 8. This requires pre-start, monthly, three monthly and yearly checks to be completed and documented. The intent of these scheduled works consists of visual checks, adjustment if required and actual testing of the AJH Direct Rail Wheel braking systems at predetermined times. Addition checks have been added to OP36N.86-RR14EVO Friction Drive Mewp service*

documentation, requiring pre-start and monthly checks to be completed and documented relating to the integrity and operation of the brake pressure gauge now fitted to all Direct Rail Wheel Braked (DRWB) Mobile Elevated Work Platforms (MEWP) within the Pod-Trak fleet. In addition to the above Sam Snelson (Pod-Trak Professional Head) has contacted members of RSSB and the M+EE Plant Committee questioning the possible inclusion of a similar gauge / indicator type system to be added as an amendment to RIS-1530-PLT Issue 7. Many On Track Plant Road Rail excavators and rail trailers have a visible indication of brake pressure being present but there is no such requirement on a Mobile Elevated Work Platform.

#### **4. To identify and mitigate the risks associated with live testing from the revised strategy.**

Prior to this incident it was possible to inadvertently leave the brake system in an override position after maintenance, therefore leaving the machine in an unbraked scenario that would not necessary be identified until the machine was on-tracked, and the operator performed an operational brake test. The nature of the incident cannot be repeated due to the implementation of the AJH Direct Rail Wheel Brake service bulletin (TCD0059) and the replacement of the original overridable spool for a NON-overridable version (P/N 1001-4921) In addition to a NON-overridable valve, the addition of a brake pressure gauge now gives a visible indication to the machine operator that brake pressure is present or not when the machine is started. This ensures the operator has reassurance and an indication that the brake pressure is available prior to on tracking and live testing the brakes on the machine. We have also contacted AJH who confirmed that the addition of a brake pressure gauge did not affect the integrity or operation of the existing Direct Rail Wheel Brake system and there was no issue in the fitting of such.

#### **5. To issue updated procedures based on this strategy and brief them to relevant staff as part of their implementation.**

Pod-Trak has briefed all relevant staff, Machine operators, Machine controllers, POS representatives and Maintenance staff on the purpose of fitting the brake pressure gauge and the importance and continued requirement of all pre-start and operational checks to completed. This is contained in Pod-Trak HSQE Brief Friction Drive Mewp Pressure Gauge No:10.2 Issue 1 05/12/2022.

It clearly explains how the gauge works and what the two distinct positions indicate in relation to brake operation.

In addition, two brake pressure gauge checks have been added the machine service documentation OP36N.86-RR14EVO Friction Drive Mewp service documentation. This requires pre-start, monthly, three monthly and yearly checks to be completed and documented by maintenance staff depending on the time scale. The intent of these scheduled works consists of checking the gauge for visible damage, any leaks, a zero reading when the machine is switched off and the correct operation of the gauge relating to brakes on or off, depending on travel lever position (Forward/ Neutral/ Reverse). Details are recorded on the machine documentation for review as required