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ATSB TRANSPORT SAFETY REPORT
Rail Occurrence Investigation RO-2011-006
Final

# Collision between freight train 7SP3 and a track mounted excavator near Jaurdi, Western Australia

28 March 2011

Figure 1: Train 7SP3 and track mounted excavator following the collision


Photograph © John Holland Rail

## Abstract

At about 1308[1] on 28 March 2011 a collision involving freight train 7SP3 and a track mounted excavator[2] occurred between Jaurdi and Darrine, Western Australia.

The train driver sustained a minor injury. There was significant damage to the lead locomotive and the excavator, and minor damage to the track as a result of the accident.

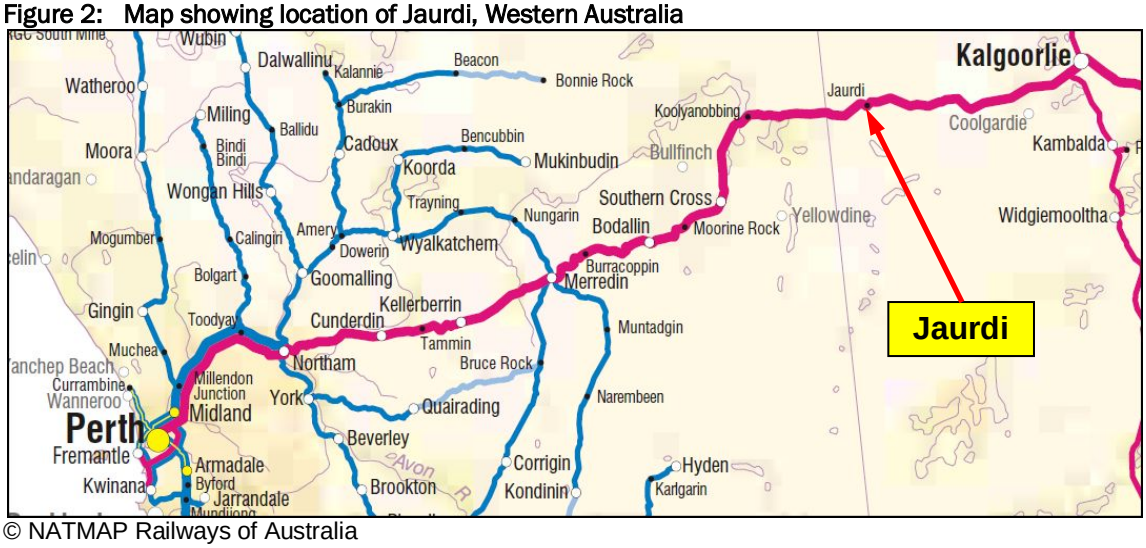
The investigation found that two track mounted excavators had been placed back on the track without permission of the Authorised Employee responsible for the coordination of track side safeworking activities between Jaurdi and Darrine. Other findings were that the communication equipment available to the track crews was inadequate, the sharing of safeworking protection information at pre-work briefings had not occurred and the application of a WestNet Rule had been simplified.

The investigation identified three safety issues, each of which has been addressed, as applicable, by the track access provider or track maintenance organisation.

1 The 24-hour clock is used in this report. Australian Western Standard Time (WST), UTC + 8 hours.

2 An excavator capable of travelling on road or rail.

Figure 2: Map showing location of Jaurdi, Western Australia

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# FACTUAL INFORMATION

## Location and track structure

The collision occurred on a straight section of track near the 511.600 km[3] track mark between the Jaurdi (525 km) and Darrine (491 km) crossing loops on the Defined Interstate Rail Network (DIRN) between Adelaide and Perth (Figure 2). Jaurdi crossing loop is located about 135 km west of Kalgoorlie (Western Australia).

The section of track was elevated about 1.2 m above the natural ground level with a 1.6 km section of downward gradient at 1 in 150 reducing to about 1 in 413 at the point of impact.

The maximum permitted track speed for freight train 7SP3 through the Jaurdi - Darrine section was 110 km/h.

The track is managed by Brookfield Rail (formerly WestNet Rail), with maintenance contracted to John Holland Rail (JHR).

### *Freight train 7SP3*

Freight train 7SP3 was an intermodal freight service owned and operated by Pacific National. It consisted of two locomotives (NR38 leading and NR22 trailing) with 53 freight wagons (six of which were multiple platform vehicles[4]). The train was about 1443 m long with a total weight of about 3632 t. For the journey between Parkeston (near Kalgoorlie) and Perth, train 7SP3 was under the control of a single driver.

### *Rail track works*

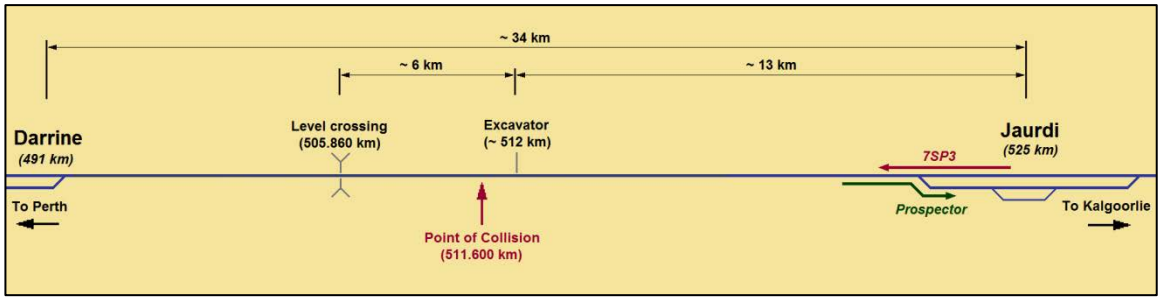
Track works were being undertaken between Darrine and Jaurdi as part of the Eastern Goldfields Re-railing Project. The works involved two teams of track workers carrying out boxing-up[5] of ballast and other corrective works. One team was operating two track mounted excavators, while the second team was operating a ballast regulator (track machine TM-032) and a tamper (track machine TM-734). At the time of the accident, the two excavators had been 'put-on' track at a level crossing (505.860 km) about half way between Jaurdi and Darrine. They were intending to work near the 510 and 512 km marks (Figure 3) before progressively working east towards Jaurdi. The track machines were at Jaurdi and were intending to work back towards Darrine (and the excavators) performing track surfacing operations.

3 Distance in rail kilometres from a track reference point located at the East Perth Terminal, Western Australia.

4 Multiple platform vehicles on train 7SP3 were 5 pack wagons; an articulated wagon comprising five platforms with common bogies between platforms.

5 The process of filling the track with ballast to the specified ballast profile including the shoulder.

Figure 3: Accident site between Darrine and Jaurdi




*Track safeworking and signalling*

The track between Darrine and Jaurdi is a bi-directional single line equipped with automatic signalling. Half pilot staff keys[6] at Darrine and Jaurdi were used for track occupancy authority. When the half pilot keys were removed, the adjacent signal displayed a stop aspect thereby preventing train movements into the track section. On the day of the collision these arrangements were used to protect the workers within the worksite. Additional safety protections included detonators placed on the track east of Jaurdi and west of the Darrine work section in accordance with Brookfield Rail safeworking rules.

The John Holland Rail Supervisor (Track Machines) was the principal person and Authorised Employee in charge of safeworking in relation to the track works between Jaurdi and Darrine. His role included communicating with the Brookfield Rail train controller in Northam and directing when work on track would commence and cease between scheduled train movements. When working on the track, all workers in the section, including the excavator operators and a second Supervisor (Excavators) located at Darrine, were under the direction of the Supervisor (Track Machines) located at Jaurdi.

The Supervisor (Track Machines) commenced work in the rail industry in 2009 and had worked in various areas of infrastructure maintenance throughout his employment with JHR. He was trained in the WestNet Rules and held the appropriate safeworking qualifications for managing track section closures and re-openings in collaboration with the train controller.

The Supervisor (Excavators) had about 35 years rail service with many of those years working at a supervisory level within the fields of civil construction and maintenance, provision of safe-working for track gangs and working on track including the operation of track machines. He had worked for JHR for 15 years and at the time of the accident was a Distribution Supervisor in charge of ballast, sleeper & rail trains. He held appropriate safeworking qualifications allowing him to coordinate communications with train control and manage maintenance works on the track.

## The occurrence

Freight train 7SP3 originated in Sydney and its destination was Forrestfield near Perth. The train departed Parkeston (near Kalgoorlie) at 1000 on 28 March 2011. As was common practice, the driver carried out a running brake test near Bonnie Vale (about 110 km before the collision), where he found the train's brakes to be operating very well.

Prior to track works commencing on the 28 March 2011, the Supervisor (Excavators) obtained a copy of the Brookfield Rail train running information for that day and later at Southern Cross he conducted a pre-work briefing to advise the two excavator drivers and a Brookfield Rail Perway Inspector of work to be carried out. The briefing discussed the work plan, safeworking process, hazards at the worksite and the three scheduled track possession times that would allow them to place their excavators on the track. The track possession times, between scheduled freight and passenger train services, specified by Brookfield Rail train control were 0830 to 1030, 1110 to 1230 and 1300 to 1600.

6 A metal staff located at the ends of a section, and interlocked with signal circuits. Two half staffs can be joined to provide a pilot staff for the section.

The briefing by the Supervisor (Excavators) for the three track possession periods was identical to that communicated by the Supervisor (Track Machines) to his crew working at Jaurdi.

At 1105, Brookfield Rail train control contacted the Supervisor (Track Machines) at Jaurdi and advised him that after an iron ore train (number 2415) heading east had cleared the departure signal at Jaurdi, the half pilot keys could be removed at Jaurdi and Darrine, thereby protecting the section for track works. From 1108, the track machines and excavators worked on track within the protected section.

As train 7SP3 travelled west, it crossed a rail work train (number 2865) that was standing in the passing loop at Stewart (587 km) then diverted into the passing loop at Wallaroo (562 km) to allow the iron ore train (number 2415) to cross. Train 7SP3 departed the Wallaroo loop at 1219. The driver was aware track work was being carried out in the Jaurdi to Darrine section ahead of his train.

At about the same time, the track machines were preparing to clear the track for the arrival of an east-bound *Prospector* passenger train. By 1225 both track machines had been positioned in the siding at Jaurdi and the half pilot staff key (at Jaurdi) had been reinserted. At 1227 the train controller contacted the Supervisor (Track Machines) enquiring when the Supervisor (Excavators) was going to restore his half pilot staff key to enable the signal to clear at Darrine, as the *Prospector* was approaching the Darrine to Jaurdi section. The Supervisor (Track Machines) replied that the Supervisor (Excavators) was in the process of restoring the half pilot staff key at Darrine and the section was about to clear for the passage of the *Prospector.* Soon after 1230, the *Prospector* entered the Darrine to Jaurdi section and proceeded towards Jaurdi.

After the *Prospector* had entered the section, the Supervisor (Excavators) contacted the two excavator drivers by mobile telephone to tell them to wait 5 to 10 minutes after the *Prospector* had passed their location before putting their excavators back on track to travel east to the worksite. At this time the excavator drivers were located at the 505.860 km mark, a level crossing about 15 km east of Darrine.

At about 1247, as the *Prospector* was approaching Jaurdi, the driver was contacted by train control and instructed to take the *Prospector* into the Jaurdi passing loop to allow freight train 7SP3 to take the mainline for its journey to Perth. Shortly after, at 1252, the driver of the *Prospector* confirmed with train control that he was clear of the mainline and train 7SP3 was authorised to pass through Jaurdi and continue towards Perth.

Meanwhile, the excavator operators had positioned their excavators back on the track and were proceeding towards Jaurdi at about 25 km/h. The trailing excavator stopped at the 510 km mark and commenced boxing up ballast, while the leading excavator continued east to the 512 km mark.

At about 1302 train 7SP3 was travelling at about 105 km/h when it exited a right-hand curve leading onto a straight section of track with a sighting distance ahead of about 4 km. At this time the driver of the leading excavator looked to the east and could see a light in the distance, but was not sure of its source, or if it was moving towards him. His initial thought was that the light was from a track machine working west from Jaurdi.

At about the same time, the driver of train 7SP3 was focussing his attention on sighting signal 512 in the distance (located at 512.936 km) when he observed an unrecognisable object ahead of him. He soon realised that the object was on the track and immediately reacted by sounding the horn continuously for 7 seconds before making an emergency brake application.

The excavator driver realised that the vehicle approaching him was travelling too fast and that the light was too bright to be one of the track machines from Jaurdi. He immediately stopped and reversed his machine away from the train which was quickly closing on him. The excavator driver then used the UHF radio in the excavator cab to call the driver of the trailing excavator to warn him that the train that was heading towards them by saying '*train on – get off track*'. The other excavator driver acknowledged the message and both excavator drivers continued to drive back towards Darrine at their maximum speed of about 25 km/h.

After making the emergency brake application, the train driver continuously sounded the horn for

31 seconds. Six seconds before impact, the train driver retreated to the locomotive vestibule and braced himself, expecting a violent collision and possible derailment of his train.

About 3 seconds before the collision the driver of the leading excavator jumped clear of his machine, landing at the base of the track formation and rolling on the ground as the train collided with his excavator. Fearing the train would derail around him, the excavator driver got to his feet and quickly ran into the scrub about 20 m from the track.

Train 7SP3 was travelling at 67 km/h when it collided with the excavator. The front of the locomotive rode up onto, and became wedged on, the trailing components of the excavator. The now interlocked excavator and locomotive continued along the track finally coming to a stop 290 m and 34 seconds after the point of impact.

Around the same time as the collision, the Supervisor (Excavators) at Darrine had telephoned the Supervisor (Track Machines) enquiring if he brought his track machines back into the section. When the Supervisor (Track Machines) mentioned that the west-bound freight train had entered the section, the Supervisor (Excavators) told the Supervisor (Track Machines) to *'stop the freighter'* before immediately attempting to contact the excavator operators by mobile telephone. When he could not establish contact with them, he started to drive along the railway access road towards their work area, a distance of about 21 km.

The Supervisor (Track Machines) then made a radio call telling the driver of 7SP3 to stop his train. The train controller overheard this transmission and also radioed the driver of 7SP3 asking him to *'please pull up'* and stop his train. Neither call received a response. The train controller contacted the Brookfield Rail Track Liaison Officer (TLO) who also attempted to contact the driver of train 7SP3, again without success. Radio transmissions from the train controller the TLO and the Supervisor (Track Machines) were not heard by the train driver before the collision.

### *Post occurrence*

After train 7SP3 came to stop, the driver contacted the train controller advising him that he had collided with an excavator. While the train driver sustained a minor injury, the excavator operator who had evacuated the machine was uninjured. The Brookfield Rail train controller closed the section of track between Jaurdi and Darrine to protect the accident scene.

## ANALYSIS

Investigators from the Australian Transport Safety Bureau (ATSB) were dispatched from Adelaide on 29 March 2011, flying to Kalgoorlie then travelling by road vehicle to Southern Cross. On arrival the investigators were briefed on the occurrence by rail safety managers from Brookfield Rail and John Holland Rail. Photographic and preliminary written evidence from the collision site was also collected and examined. Evidence such as train control voice logs, site protection forms and procedures information were also obtained.

ATSB investigators interviewed directly involved employees at Southern Cross on Tuesday 29 March 2011. An interview with the driver of train 7SP3 was carried out on Wednesday 30 March 2011 and documentation from the locomotive cab and data log information was secured at this time.

During the investigation evidence including pre-work forms, network control voice logs and employee records of interview were examined to determine whether the network rules and procedures in relation to worksite protection had been followed and were adequate to safely manage workers on or near the track.

Similarly, an examination of communication equipment, systems and procedures was made to ensure that track workers, track supervisors and the train controller could effectively communicate with each other for the track works being carried out within the Jaurdi to Darrine section.

### *Supervisor (Excavators)*

The Supervisor (Excavators) was responsible for co-ordination of work carried out by the excavator operators at the Darrine track section end. In the weeks leading up to the accident the Supervisor (Excavators) was coordinating the safeworking protection with train control for his crew at Darrine. However, for safeworking activities on the 28 March 2011, the Supervisor (Excavators) was working under the direction of the Supervisor

(Track Machines) located near the Jaurdi end. Following separate pre-work briefings on the morning of the accident there was no discussion about train running information and site protection between the Supervisor (Excavators) and the Supervisor (Track Machines).

The process agreed between the supervisors for managing train movements into the track section was for the Supervisor (Track Machines) to gain permission from train control and then communicate with the Supervisor (Excavators) authorising him to remove the half pilot key at Darrine to prevent east-bound trains entering the section. The Supervisor (Track Machines) would remove the half pilot key at Jaurdi to prevent west-bound trains from entering the section.

However at about 1245 when 7SP3 was at Jaurdi and about to enter the section, the Supervisor (Excavators) instructed the drivers of the excavators to wait about 5-10 minutes after the *Prospector* had passed the level crossing where they were waiting, then get back on track and travel to their work sites (Figure 3).

During an interview with the Supervisor (Excavators) he stated that he was conversant with the safeworking rules and procedures and was aware that the management of train movements within the Jaurdi to Darrine section rested with train control and the Supervisor (Track Machines). He mentioned that he had pre-empted that the track would be clear after the passage of the *Prospector* through the Darrine worksite and he could then advise the excavator drivers to get back on the track. In addition, knowing the time was near 1300 he also believed that the *Prospector* was the only train movement before the third track possession period for the day.

The Supervisor (Excavators) was probably focused on the train running information that he had obtained that morning and had a lapse in judgement in acting beyond the scope of his authority. He should have first checked with the Supervisor (Track Machines) who was managing the work site protection on the day (and who was aware that train 7SP3 was in the section), before instructing the excavator drivers to put back on track a little after 1245.

### *Communications*

As the Supervisor (Excavators) was working under the direction of the Supervisor (Track Machines), communications between the two work groups, that were located up to 34 km apart, were vital to the safe occupation on the track and for the removal of machinery from the track before the passage of trains.

On the day of the accident, the Supervisor (Excavator's) usual motor vehicle was out of service and he was using a hired vehicle that was equipped with a UHF Citizens Band radio. The vehicle was not fitted with a UHF train control radio or a mobile telephone car kit with a high gain antenna like his regular vehicle. Under these circumstances, the Supervisor (Excavators) had a limited communication capability with a hand held mobile telephone to converse with the Supervisor (Track Machines) for safeworking instructions and the UHF Citizens Band radio (UHF-CB) for contact with the excavator operators. While the Supervisor (Excavators) and the Supervisor (Track Machines) were able to communicate with each other by mobile telephone when they were located at Darrine or Jaurdi, reception was unreliable elsewhere within the section. However, the use of the mobile telephone for safeworking communication between the Supervisor (Track Machines) and the Supervisor (Excavators) for closing and opening the section did not contribute to the accident.

The UHF-CB radio's range was limited to about 2 km, is insecure and unreliable for safety critical work. The excavator drivers used UHF-CB radios to communicate between themselves and the Supervisor (Excavators) when they were within range of each other. When there was sufficient signal strength, communication with the Supervisor (Excavators) was also made by mobile telephone. Where the excavator drivers were located on the track at the time of the occurrence there was no mobile telephone reception.

No open channel UHF train control radios were installed in the excavators, nor is this a safeworking requirement. Open channel radio systems allow voice transmissions between train control, train drivers and Approved Employees to be heard simultaneously. If these radios had been installed in the excavators, messages transmitted over the open channel train control radio may

have alerted the excavator drivers of impending train movements around them.

In this instance separate conversations between the train controller and the drivers of the *Prospector* and train 7SP3 at Jaurdi would probably have provided an early warning to the excavator drivers that train 7SP3 was approaching their location which may have allowed them to clear the track and avoid the collision.

Radio transmissions from train control and the Supervisor (Track Machines) to the driver of train 7SP3 calling for him to stop his train were not heard by him before the collision with the excavator. The train driver stated that when he first realised an excavator was on the track, his immediate reaction was to place the brake into the emergency brake position and give a sustained blast of the locomotive horn. After the collision and the train had stopped the driver moved from the vestibule back into the locomotive cabin and stated that he heard the train controller saying *driver of 7SP3, one of the track workers is trying to get you to stop your train, there must be something wrong with your train*. The driver was not aware of any radio transmissions after he saw the excavator as his attention was focused on stopping the train and sounding the locomotive horn to provide as much warning to the excavator driver as possible before he retreated to the vestibule.

### *Closing and opening of track sections*

Where a section of track is to be closed for the purpose of carrying out maintenance works, WestNet Rule 199 - 1 (a) states that a Section Closing and Opening Authority Telegram (SCAO) - form SW 17, shall be used.

> (1) Where a section of railway is rendered unfit for normal traffic the Approved Employee may close the section;
>
> a) for general maintenance work, by the issue of a SCAO (Section Closed and Opening Authority) telegram SW 17.
>
> b) when closed because of washaways, derailments or other exceptional circumstances by the issue of a General Telegram.
>
> (2) When a section of line is required to be closed for the purpose of carrying out works, the following instructions must be observed:
>
> a) The section of closed must be for the shortest length possible.
>
> b) Prior notice must be given by the Approved Employee.
>
> c) a Special Train Notice Telegram must be issued.

The Supervisor (Track Machines) was the Approved Employee responsible for closing the Jaurdi and Darrine track section and initiating contact with the train controller to complete a SCAO form.

At about 0835 the train controller contacted the Supervisor (Track Machines) and they jointly completed individual SCAO forms for the first of the three scheduled track closures. Both forms were correctly endorsed by the train controller recording a repeated back time of 0835.

Details on the completed SCAO forms showed the closure period for the Jaurdi and Darrine section would be from 0835 to 1600. This period of time encompassed the three scheduled track closures that were discussed at separate pre-start work briefings conducted by the Supervisor (Track Machines) and the Supervisor (Excavators).

The SCAO form is constructed in two separate sections, Part A (Closure) and Part B (Opening). The form has been designed for the completion of details for a single closure and opening of a defined track section. Text fields on the SCAO form do not cater for the completion of multiple track closures and openings on the same document.

The first track closure commenced at 0835 and was later reopened at 1020 for the passage of iron ore train 2415. The second closure of the track at 1104 was again initiated by the train controller. The track was re-opened at about 1225 to allow for the passage of the *Prospector* passenger train to Kalgoorlie and opposing freight train 7SP3 to Perth. Each of the re-opening and closing times for the track section were accurately recorded on the train control graph; however after the first reopening of track at 1020 the initial SCAO was not cancelled. A new SCAO form was not completed by the train controller and the Supervisor (Track Machines) in accordance with WestNet Rule 199 where two SCAOs were required. No extraordinary notations had been made by the train controller or the Supervisor (Track Machines) on either copy of the SCAO form to record intermediate track opening and closing times.

During the investigation the ATSB was advised that over time there had been degeneration in the application of parts of the WestNet Network Rules by some safeworking staff. It was stated that this had been brought about by:

> A mutual goal of minimising disruption to revenue rail movements whilst also maximising the windows of opportunity to conduct project works between rail movements.

In this instance a routine violation through the simplification of the WestNet Network Rules was demonstrated by combining three closing and opening periods for the same track section on one SCAO form.

# FINDINGS

## Context

On 28 March 2011 a collision occurred near Jaurdi, Western Australia, between freight train 7SP3 and a track mounted excavator that had been carrying out track maintenance work. The excavator driver escaped without injury immediately prior to the collision. The excavator was pushed along the track by the locomotive for about 290 m before coming to a stop. Significant damage was sustained to the excavator and the lead locomotive.

From the evidence available, the following findings are made with respect to the collision between freight train 7SP3 and a track mounted excavator near Jaurdi, Western Australia and should not be read as apportioning blame or liability to any particular organisation or individual.

## Contributing safety factors

- The Supervisor (Excavators) directed the excavator drivers to put their excavators on the track before advice had been received from the Supervisor (Track Machines) that the track was clear of train movements and was safe for the recommencement work.

## Other safety factors

- New Section Closing and Opening Authority Telegrams (SCAO) were not completed by the train controller and the Supervisor (Track Machines) for each closing and opening of the track section in accordance with WestNet Rule 199. *[Minor Safety issue]*
- At separate pre-work briefings, there was no discussion about train running information and site protection between the Supervisor (Excavators) and the Supervisor (Track Machines). *[Minor Safety issue]*
- The communications equipment available to the Supervisor (Excavators) was inadequate to effectively communicate with the Supervisor (Track Machines) and with the drivers of the track mounted excavators between Darrine and Jaurdi. *[Minor Safety issue]*

## Other key findings

- The driver of train 7SP3 reacted quickly and appropriately in sounding his horn in long blasts to warn the excavator driver of the approaching train and bringing his train to a stop as soon as practicable.
- The driver of the excavator was vigilant in the operation of his machine and his safeworking environment when he reacted quickly in an attempt to distance himself from the approaching train and thereby lessened the consequences of the collision.

# SAFETY ACTION

The safety issues identified during this investigation are listed in the Findings and Safety Actions sections of this report. The Australian Transport Safety Bureau (ATSB) expects that all safety issues identified by the investigation should be addressed by the relevant organisation(s). In addressing those issues, the ATSB prefers to encourage relevant organisation(s) to proactively initiate safety action, rather than to issue formal safety recommendations or safety advisory notices.

All of the responsible organisations for the safety issues identified during this investigation were given a draft report and invited to provide submissions. As part of that process, each organisation was asked to communicate what safety actions, if any, they had carried out or were planning to carry out in relation to each safety issue relevant to their organisation.

## Brookfield Rail

*Section Closing and Opening Authority Safety Issue*

### Safety Issue

New Section Closing and Opening Authority Telegrams (SCAO) were not completed by the train controller and the Supervisor (Track Machines) for each closing and opening of the track in accordance with WestNet Rule 199.

### Action taken by Brookfield Rail

Brookfield Rail has developed a training video for employees and their contractors to provide clarity to WestNet Rule 199. In conjunction with the video, a procedure has been implemented that defines the supplementary safeworking procedures for the management of closed sections of track including multiple worksites within a closed section.

### ATSB assessment of action

The ATSB is satisfied that the action taken by Brookfield Rail adequately addresses this safety issue.

## John Holland Rail

*Section Closing and Opening Authority*

### Safety Issue

New Section Closing and Opening Authority Telegrams (SCAO) were not completed by the train controller and the Supervisor (Track Machines) for each closing and opening of the track in accordance with WestNet Rule 199. *[Minor Safety issue]*

### Action taken by John Holland Rail

John Holland Rail (JHR) has commissioned a comprehensive audit of how its organisation applies safe working rules for rail projects in WA. A JHR document states that the audit must assess the appropriate selection and application of the safe working rule to suit the works, location and track configuration. In addition track protection officers have been appointed for all major projects whose task is to manage all safeworking activities within dedicated track sections.

For works on the Brookfield Rail network, a Brookfield Rail training video for safeworking employees and contractors has been developed to provide clarity to WestNet Rule 199. In conjunction with the video, a procedure has been implemented that defines the supplementary safeworking procedures for the management of closed sections of track including multiple worksites within a closed section.

### ATSB assessment of action

The ATSB is satisfied that the action taken by John Holland Rail adequately addresses this safety issue.

*Pre-work briefings*

### Safety Issue

At separate pre-work briefings, there was no discussion about train running information and site protection between the Supervisor (Excavators) and the Supervisor (Track Machines).

### Action taken by John Holland Rail

JHR have advised that the organisation will audit and review existing practices to ensure the pre-work brief process captures other workgroups operating in the same section, or if the work groups have a potential to impact each other. The review includes site protection plans that must also clearly identify the site, protection to be applied and kilometre locations of work groups in relation to the track, so the work group can clearly identify where they will be working and how they will be protected.

### ATSB assessment of action

The ATSB is satisfied that the action proposed by John Holland Rail will adequately address this safety issue.

*Communications Equipment*

### Safety Issue

The communications equipment available to the Supervisor (Excavators) was inadequate to effectively communicate with the Supervisor (Track Machines) and with the drivers of the track mounted excavators between Darrine and Jaurdi. *[Minor Safety issue]*

### Action taken by John Holland Rail

John Holland Rail (JHR) have conducted a communications audit on the entire Brookfield

Rail freight/grain network and identified several communication gaps. JHR has worked with Brookfield Rail to boost the output of the existing radio repeater towers. The JHR project teams in those areas now have portable VHF transceivers and a booster trailer to extend communication capabilities 30 km either side of their work site where there are no radio repeater towers.

### ATSB assessment of action

The ATSB is satisfied that the action taken by John Holland Rail adequately addresses this safety issue.

# SOURCES AND SUBMISSIONS

## Sources of Information

Brookfield Rail Pty Ltd

John Holland Rail

Pacific National

The drivers of the excavators

The driver of train 7SP3

The Supervisor (Excavators)

The Supervisor (Track Machines)

The train controller

## References

Brookfield Rail Pty Ltd - Procedure for Management of Closed Sections – W110-200-037

WestNet Rules Doc No. C100-000-005

## Submissions

Under Part 4, Division 2 (Investigation Reports), Section 26 of the Transport Safety Investigation Act 2003, the ATSB may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. Section 26 (1) (a) of the Act allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to:

Brookfield Rail Pty Ltd, John Holland Rail, Office of Rail Safety Western Australia, Pacific National, the driver of the excavator, the driver of train 7SP3, the Supervisor (Excavators), the Supervisor (Track Machines) and the train controller.

Submissions were received from Brookfield Rail Pty Ltd and the Office of Rail Safety Western Australia. The submissions were reviewed and where considered appropriate, the text of the report was amended accordingly.