



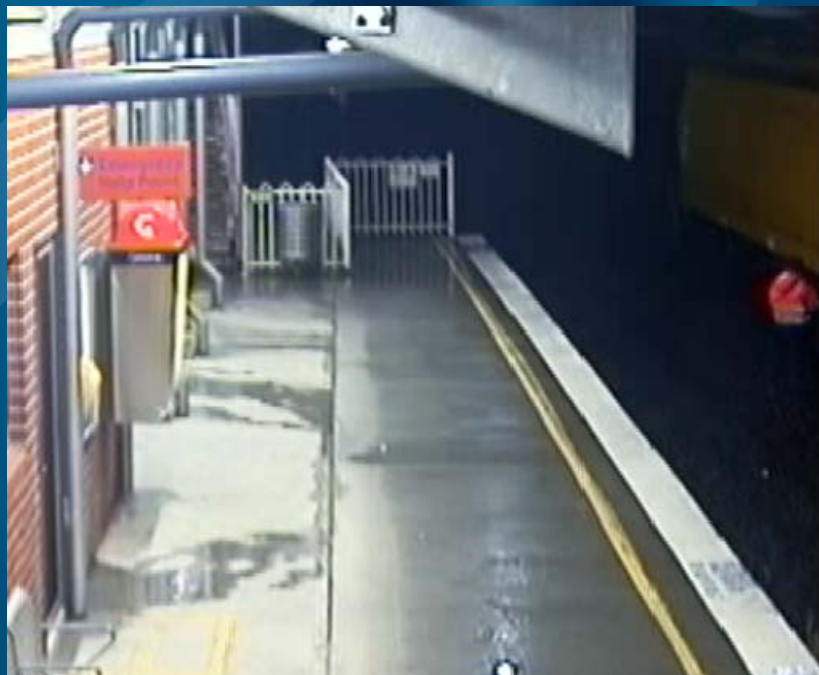
Office of Transport Safety Investigations

RAIL SAFETY INVESTIGATION REPORT

SAFEWORKING INCIDENT

UNANDERRA

12 DECEMBER 2011



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Released under the provisions of
Section 45C (2) of the *Transport Administration Act 1988* and
Section 67 (2) of the *Rail Safety Act 2008*

Investigation Reference 04531

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ACRONYMS AND ABBREVIATIONS

AC	Area Controller
ANRP	Australian National Rules and Procedures
ARTC	Australian Rail Track Corporation
ASB	Absolute Signal Blocking
ATSB	Australian Transport Safety Bureau
CSB	Controlled Signal Blocking
CRN	Country Regional Network
DIP	Directly Involved Party
DIRN	Defined Interstate Rail Network
ETM	End of Train Marker
FAID	Fatigue Audit Interdyne
ITSR	Independent Transport Safety Regulator
NOS	Network Operations Superintendent
OTSI	Office of Transport Safety Investigations
PO	Protection Officer
RISN	Rail Industry Safety Notice (issued by ITSR)
RISSB	Rail Industry Safety and Standards Board
RMC	(RailCorp's) Rail Management Centre
TOA	Track Occupancy Authority
WSC	Wollongong Signalling Complex

GLOSSARY OF TERMS

Absolute Signal	A fixed signal that must not be passed at STOP without the authority of the Network Control Officer.
Area Controller	A grade of signaller in charge of a signalled location or a part of a signalled location.
Bi-directional	Allowing for normal travel in either direction.
Blocking Facility	A facility or device used by a Qualified Worker to prevent either the unintended issue of a Proceed Authority, or the operation of points or signalling equipment.
Cess	The space on either side of a railway line or lines and towards the rail corridor boundary.
Controlled Signal	A signal that is, or may be, controlled or operated by a Signaller or a Qualified Worker.
CountryNet Radio	A radio system which, in the RailCorp Network, allows communication between freight train crews and the Rail Management Centre.
Crossovers	A portion of line which is used to divert trains from one continuing line to another.
Danger Zone	Everywhere within 3m horizontally from the nearest rail and any distance above or below this 3m, unless a safe place exists or has been created.
Down and Up Direction	Trains travelling away from Sydney are referred to as Down trains. Movements in this direction are referred to as being in the Down direction. Trains travelling towards Sydney are referred to as Up trains. Movements in this direction are referred to as being in the Up direction.
Driver trainer	A train driver qualified to train and mentor trainees and other drivers.
End of Train Marker	A red light placed at the rear of the last vehicle of a train.
FAID (Fatigue Audit Interdyne)	A computerised model that calculates a fatigue score which is compared with the fatigue expected to be induced by working a particular pattern of work. The principal use of FAID is to better manage shiftwork, scheduling and fatigue risk.
Lookout	A Qualified Worker responsible for keeping watch for approaching rail traffic, and for warning other workers to stand clear of the line before the arrival of rail traffic.
Lookout Working	A method of working on track using lookouts to see and warn of approaching rail traffic.
Network Control Officer	A Train Controller for an unattended location, a Signaller for an attended location, or a delegate carrying out some functions of a Train Controller or Signaller.
Proceed Authority	An authority for rail traffic to enter a block (usually, in the Unanderra area, by clearing a signal).
Protection	The means used to prevent rail traffic from entering a worksite or other portion of track, or to prevent road or pedestrian traffic from entering a level crossing.
Protection Officer	The Qualified Worker responsible for the protection of a worksite.
Rail Corridor	From fence-line to fence-line, or if there are no fences, everywhere within 15m of the outermost rails.
Safe Place	A place where employees and equipment cannot be struck by rail traffic.
Signaller	A Qualified Worker who issues Proceed Authorities, and works points, signals and other signalling equipment to manage routes for safe and efficient transit of rail traffic.
Train Controller	A Qualified Worker who authorises, and may issue, occupancies and Proceed Authorities, and who manages train paths to ensure safe and efficient transit of rail traffic.
WB radio	Open channel VHF radio used primarily by train crews to talk to each other, terminal staff and signallers.

EXECUTIVE SUMMARY

At about 12:45am¹ on 12 December 2011, Pacific National freight train 3930 was stationary at Unanderra Station when the driver was contacted by the area controller (AC) in the Wollongong Signalling Complex with a request to inspect the condition of one of his wagons. To carry out this inspection, the driver requested Controlled Signal Blocking (CSB) so that he could access the danger zone of the track adjacent to his train. The intended effect of the CSB was to exclude rail traffic from the portion of track in which he would be working. The AC granted the request and the driver left the cab of his locomotive and climbed down onto the track.

While he was in the danger zone, the driver was notified by his co-driver that no CSB protection was in place and he subsequently observed the lights of an approaching train. Although he could not determine on which track this train was proceeding, he prudently moved to the closest safe place between two wagons of his train. As it transpired, the approaching train was travelling on the track on the opposite side of the platform to PN 3930 and posed no actual threat to the driver's safety.

The investigation identified a lack of adherence to communications protocols and the specific procedures, including information exchange protocols, contained in RailCorp's CSB Rules and Procedures that were in force at the time. Protecting train crew using CSB was identified as a task seldom undertaken by either the area controller or the train driver.

The Report highlights the extent to which ineffective communications continue to constitute one of the significant contributing factors in the causation of safeworking incidents reported to OTSI. Additionally, differences in the rules and procedures applied by the various network owners within NSW continue to exist.

Recommendations are made to RailCorp and Pacific National in relation to both communications and the supply and use of safeworking material; to the Rail Industry Safety and Standards Board in regard to the wording of their Absolute Signal Blocking (ASB) Rule and Procedures; and to the Independent Transport Safety Regulator in relation to the divergence of Network Rules of the various NSW network owners. Full details of the Findings and Recommendations of this rail safety investigation are contained in Parts 3 and 4 respectively.

¹ Times referred to in this report are in Australian Eastern Daylight Time (UTC + 11 hours).

PART 1 FACTUAL INFORMATION

Synopsis

- 1.1 In the early hours of 11 December 2011, Pacific National freight train 3930 was stationary at Unanderra Station. As a result of a reported safety concern, it became necessary for its driver (a driver trainer) to access the danger zone of the adjacent track to inspect one of the train's wagons. As the driver trainer had assessed that, in this instance, Lookout Working was not a suitable work on track method; he contacted the area controller (AC) at Wollongong Signalling Complex to request Controlled Signal Blocking (CSB) to provide protection against approaching rail traffic. The AC immediately granted the request and the driver trainer subsequently entered the danger zone.
- 1.2 The AC then spoke to the train controller on the South Coast Board at the Rail Management Centre (RMC) and, during this conversation, the AC appeared to be unsure of the work on track method employed by the driver trainer. The AC contacted the crew (in this case the co-driver, known as the 2nd person) and it was determined that the 2nd person would 'look out' for the driver trainer. This was despite the fact that Lookout Working had been assessed by the driver trainer as unsuitable and the fact that the driver trainer was still in the danger zone inspecting the train, with the expectation that CSB was being maintained.
- 1.3 At the time when the driver trainer was informed by the 2nd person that CSB was not in place, train K494 was approaching Unanderra. The driver trainer, seeing its lights, moved to the closest safe place between two wagons of his train. In the event, K494 was not approaching on the line on which the driver trainer had been standing, but passed safely on another line on the opposite side of the platform to PN 3930.

Location

- 1.4 Unanderra is located 88km by rail South of Sydney on the Illawarra railway line in the RailCorp Network.

1.5 Unanderra is serviced by CityRail trains (operated by RailCorp), with a single platform structure situated between the Down Illawarra Main line alongside Platform 1 and the South Coast Branch line alongside Platform 2. Adjacent to the Down Illawarra Main line is the Up Illawarra Main line (see *Figure 1*).

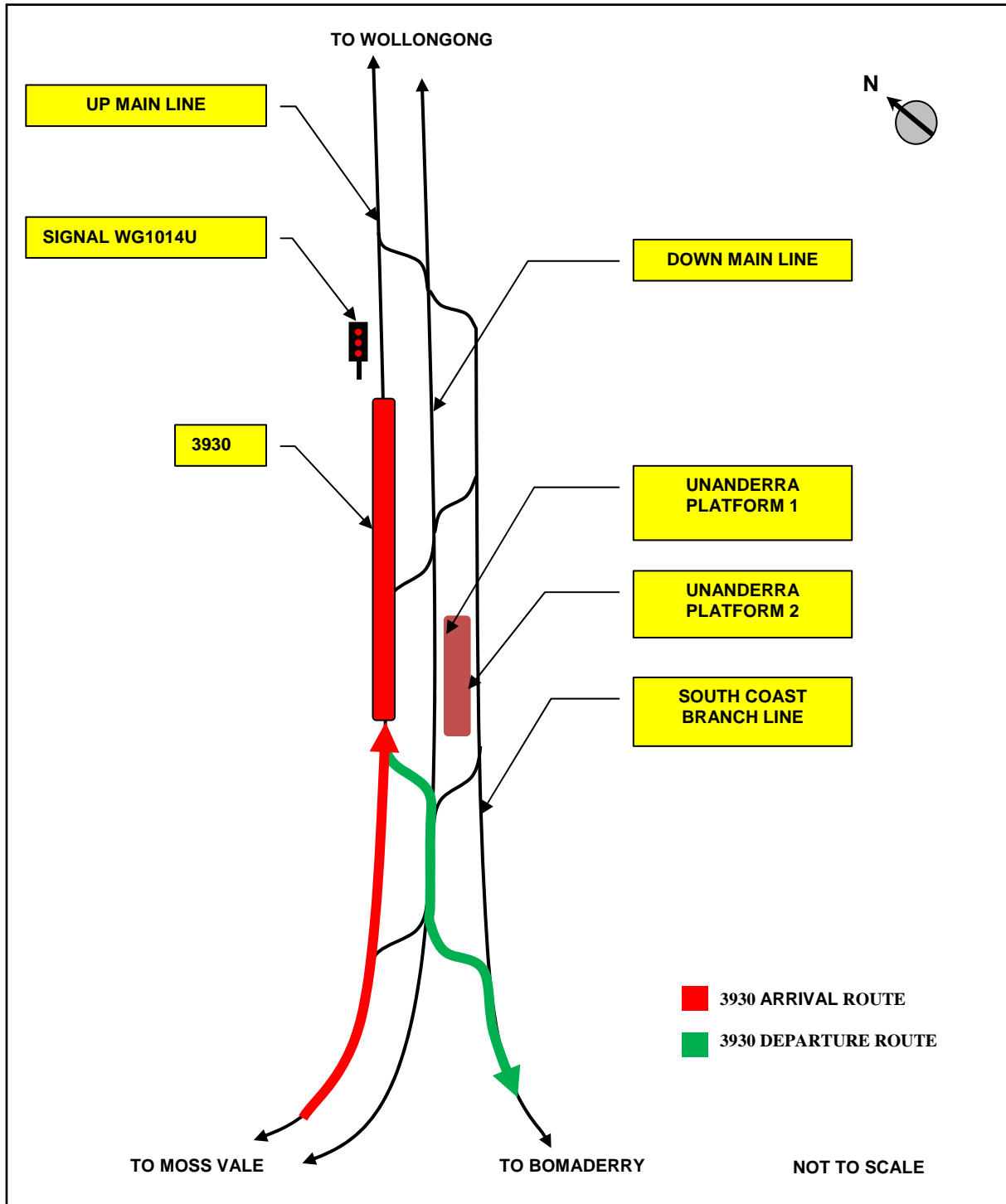


Figure 1: Simplified network map of Unanderra

- 1.6 Unanderra forms a junction with the dual Illawarra Main lines ascending and curving to the West, South of Unanderra Station, towards Moss Vale (and the Australian Rail Track Corporation (ARTC) Network). The South Coast Branch line starts just North of Unanderra Station forming the route to and from Kiama and Bomaderry (Nowra). As well as regular passenger traffic, the area is heavily used by freight trains, particularly those heading to and from Port Kembla. Additionally, freight trains arriving from ARTC territory can reverse direction (with the locomotives 'running round' their trains) and travel down the South Coast Branch line.
- 1.7 All three lines in the vicinity of the Station permit trains to operate bi-directionally, and there are a number of points and crossovers which allow rail traffic to be routed over the various lines, both North and South of Unanderra Station.
- 1.8 Passenger trains primarily use the Down Illawarra Main line and the Branch line as the Up Illawarra Main line does not have overhead wiring to facilitate electric traction. Freight trains can be routed via any of the three lines.

Network Control

- 1.9 Network control at Unanderra is provided by RailCorp. A train controller is responsible for planning and overseeing train movements in the area. This train controller operates the South Coast Board located in the Rail Management Centre (RMC) located at Cental Station in Sydney. Routes are set and proceed authorities are issued by an area controller operating a panel, or 'board', in Wollongong Signalling Complex (WSC) located near Wollongong Station.

Before the Incident

- 1.10 Pacific National grain service 3930 arrived at Unanderra from Moss Vale just before 12:15am on 12 December 2011. The train had originated at Narrandera in the State's Riverina Region and was en route to Bomaderry located to the South of Unanderra. The wagons on the train were loaded, except for six located at the Bomaderry end of the consist.

- 1.11 A relieving train crew, made up of a driver trainer and a 2nd person, had travelled from Sydney via Moss Vale to meet train 3930 at Unanderra. This was not as planned; the crew had been rostered to take charge of a train in Sydney. However, as this train was cancelled, a decision was made for the crew to travel to Unanderra so that the driver trainer could assess the 2nd person on route knowledge between Unanderra and Bomaderry.
- 1.12 At Unanderra, the train was brought to a stand on the Up Illawarra Main line with its lead locomotive at the Northern (Wollongong) end of Unanderra platform. A crew change was then performed with the incoming crew subsequently moving the train forward to signal WG1014U.
- 1.13 The driver trainer left the locomotive cab to detach the locomotives from the train in preparation to run the locomotives around to the other end of the train. While the driver trainer was doing this, his portable WB radio failed and, instead, he used his torch to signal to the 2nd person who was at the controls. Once the locomotives had moved clear, he mounted an end of train marker (ETM) onto the end of the wagon which would become the last wagon given the train was to travel in the opposite direction down the South Coast Branch line.
- 1.14 The locomotives were then run around the train via the Branch line with CCTV records showing the locomotives passing Platform 2 at 12:30am.
- 1.15 At, or just before, 12:34am the locomotives came to a stand near the Bomaderry end of the train, on the Up Illawarra Main line, ready to be attached. At about the same time, a Transport Information Line ('131500') operator called the Customer Information Desk at the RMC to relay information that a member of the public had called to report that the fourth last wagon had an 'air leak' and other noises, and was "*affecting the last four wagons*" of the train.
- 1.16 Meanwhile, the driver trainer made his way to what was now the leading wagon and removed the ETM there and, in conjunction with the 2nd person, attached the locomotives. A whistle being blown from the car park to the West of the rail corridor was audible to the train crew during this time.

- 1.17 The 2nd person got out of the cab to move to what would now be the lead cab. While walking along the track next to the locomotives, the 2nd person was hailed by a member of the public from behind the rail corridor fence. The person reported that there was a “*banging noise and bad air leak from the fourth wagon*” (fourth last as the train came into Unanderra, now the fourth from the locomotives).
- 1.18 With the locomotives reattached, the crew conducted a modified brake test. This test required that the operation of the brakes on the first three wagons be tested and verified. Because of the report from the member of the public, the driver trainer also inspected the fourth wagon. The driver trainer found there were no major defects, but noted minor skid marks and scale on wheels of the second and third wagons. The driver trainer determined that the condition was such that no action was required and the train could run as normal.
- 1.19 The driver trainer then returned to the lead locomotive. Although he had been wearing a waterproof jacket, the wind-driven heavy rain had soaked his clothing. He removed his wet garments once inside the cab.
- 1.20 At 12:41am the South Coast train controller, who had received the report of the wagon defects from the Customer Information Desk, notified the AC located at the WSC of the defects reported by a member of the public and requested the AC to ask the crew of 3930 to inspect the fourth wagon.
- 1.21 At 12:44am the AC passed on the train controller’s request to the crew of 3930. The driver trainer had already inspected the fourth wagon (from the cess side) in response to the comments made by the member of the public to the 2nd person. However, the driver trainer did not inform the AC that he had already inspected the fourth wagon and that to do so would constitute a second inspection of a wagon he had found to be in a satisfactory condition.
- 1.22 As he prepared to respond to the AC’s request, the driver trainer assessed that it would be pointless to repeat the inspection of the fourth wagon from the cess and he decided, therefore, to inspect the wagon from the danger zone on the adjacent Down Illawarra Main line.

The Incident

- 1.23 At 12:45:45am the driver trainer called the AC and requested protection using the Controlled Signal Blocking (CSB) method to allow him to access the danger zone on the adjacent line. This request was immediately agreed to by the AC: *"I'll give you a CSB on that road next to you on the, ah, Down Main there at 46² there over"*.
- 1.24 The AC placed blocking facilities (blocks) on signalling equipment to prevent rail traffic from entering the portion of track where the driver trainer required access.
- 1.25 At 12:46:30am the AC called the train controller to update him, telling him that the crew had asked for "protection" and that he had "put a block on there". The train controller queried whether CSB had been requested. The AC initially stated that the crew had asked for CSB but then said that the crew had asked for "protection".³ He then stated that he had "put a block on between 1012 and 1025 signals". The train controller asked: *"So, has he requested a CSB or not?"* The AC's response again included mention of "protection" that had been requested. He then appeared to question whether CSB could be issued at this location as *"you need two signals each way, don't you?"* The AC then agreed with the train controller that he would contact the crew of 3930 again to clarify the matter.
- 1.26 Meanwhile, the driver trainer put his wet garments back on and prepared to leave the locomotive to inspect the wagon.
- 1.27 From 12:47:45am the CCTV image shows light from the driver trainer's torch visible as he commenced to walk back on the Down Illawarra Main line towards the fourth wagon. The driver trainer inspected the other three wagons as he passed. The driver trainer proceeded, still on the Down Illawarra Main line, between his train and the platform until he reached the fourth wagon. During this time, the 2nd person remained in the cab.

² "at 46": meaning the time that CSB was authorised (12:46am) i.e., the time from which it was safe to go onto the Down Main line.

³ The word "protection" is defined in the Glossary of RailCorp's Network Rules as *"the means used to prevent rail traffic from entering a worksite or other portion of track, or to prevent road or pedestrian traffic from entering a level crossing"*.

1.28 At 12:48:05am, the AC contacted the 2nd person via WB radio⁴ and the following conversation took place:

AC: *“Sorry to be a pain; while you’re checking that...truck out, are you looking out for your mate there or you want to request a CSB there, over?”*

2nd Person (after a pause): *“He already requested one”*.

AC: *“Say again, over”*.

2nd Person: *“He already put in a request for one, over”*.

AC: *“Yep, was that for a CSB or just back along the side of the train there and you’ll be looking out for him, over”*.

2nd Person: *“(garbled)...I’ll be able to keep a look out, over”*

AC: *“OK, thanks very much for that, put that on at 46 thank you”*.

While the 2nd person agreed that a ‘look out’ would be kept, the tone of the conversation indicated that the agreement was made with some reluctance. The time indicated, “46” (12:46am), implied that this ‘lookout’ arrangement completely replaced the CSB previously authorised from the same time.

1.29 The 2nd person immediately left the cab of the locomotive and entered the danger zone. The 2nd person sought to identify the location of the driver trainer and simultaneously called him by mobile telephone. The driver trainer answered the call while he was in the danger zone inspecting the fourth wagon, with train 3930 on one side and Unanderra Station platform on the other.

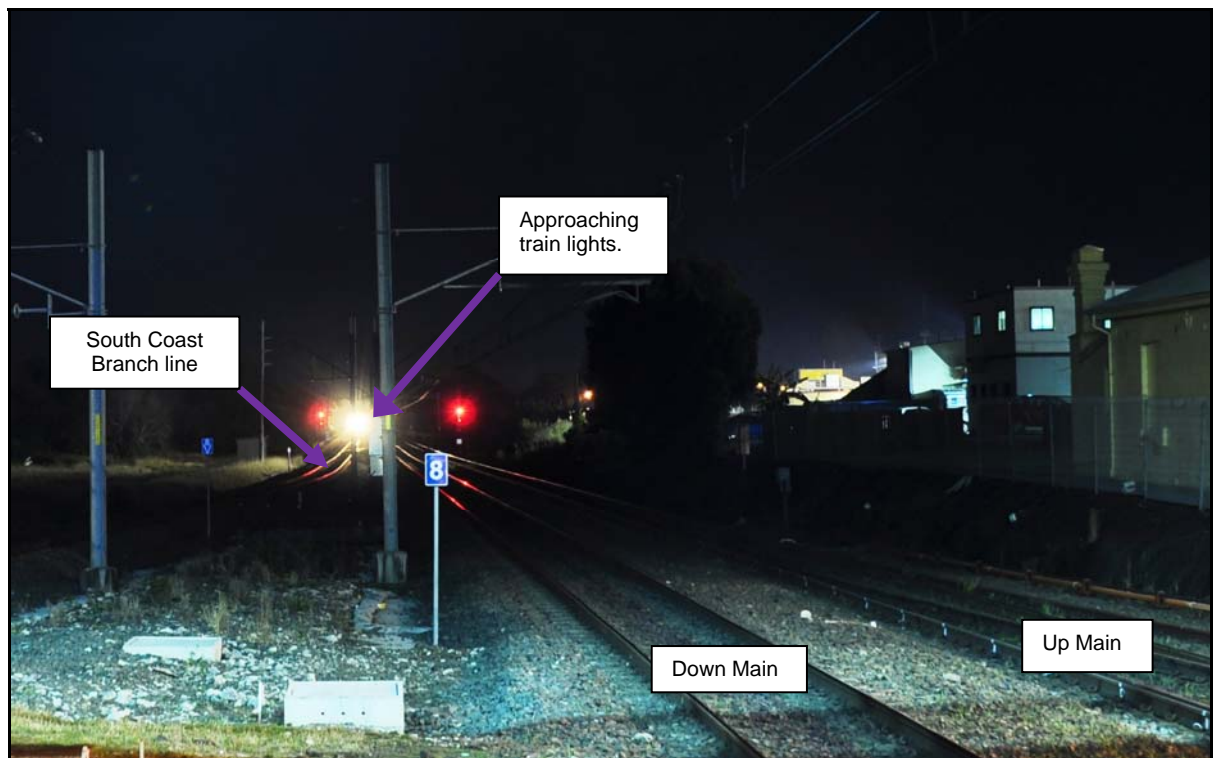
1.30 The 2nd person told the driver trainer what the AC had said, that there was no CSB applied and that she had to ‘look out’ for him. The call was then terminated.

1.31 As evidenced from CCTV images, the lights of approaching train K494 (a four-car Oscar⁵ set), on the South Coast Branch line, became visible from Unanderra Station at about 12:50:30am.

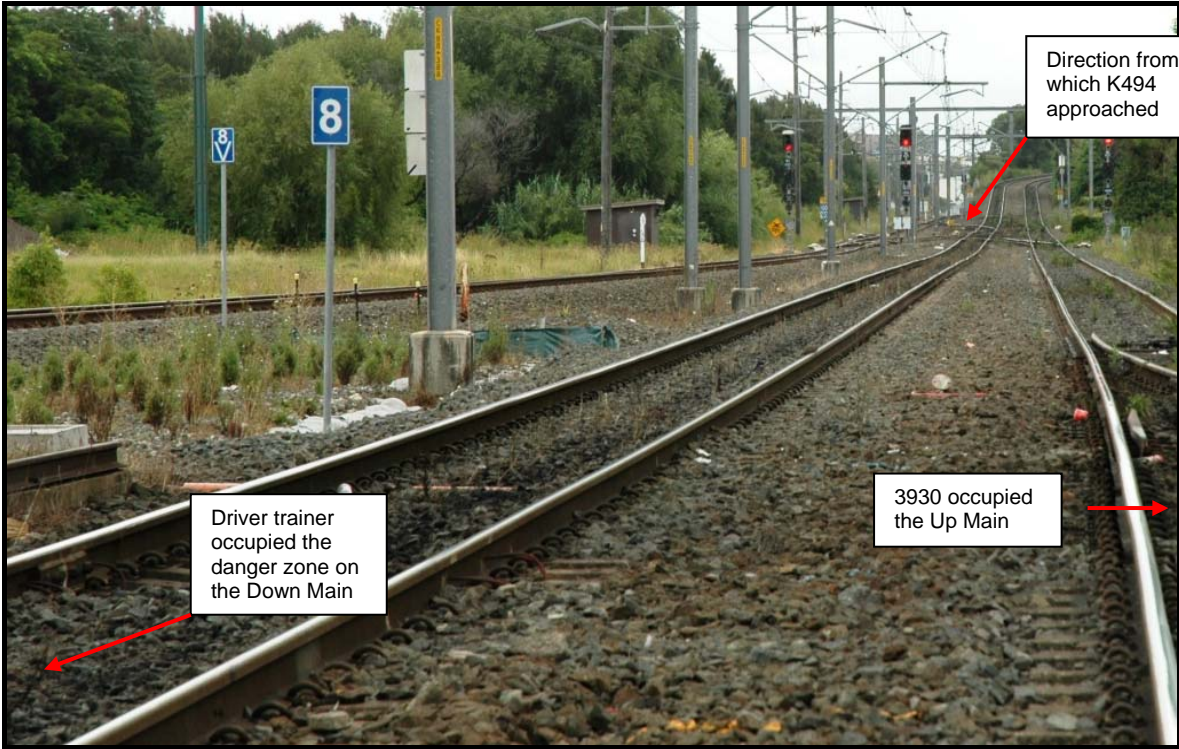
⁴ The driver trainer did not have an operable radio at this time as it had failed earlier.

⁵ Oscar: ‘Outer Suburban Cars’ designated ‘H sets’; a class of electric multiple unit owned and operated by RailCorp.

- 1.32 The driver trainer looked towards the South and saw the lights of run K494. As all the lines passing through Unanderra Station are bi-directional, he could not immediately determine on which line the train was approaching (see *Photographs 1 and 2 and Figure 2*).
- 1.33 At 12:50:39am the CCTV image shows that the driver trainer moved into the space between two wagons of train 3930 to avoid being struck should the approaching train have passed on the Down Illawarra Main line.
- 1.34 The 2nd person became aware of the approaching lights on turning to climb back into the locomotive's cab. The 2nd person climbed into the cab intending to sound the engine's whistle to alert the driver trainer, but K494 passed the location before there was time to do so.
- 1.35 At 12:51am the cab of K494 reached the Southern end of Platform 2. As it was on the Branch line, on the opposite side of the platform to train 3930, it posed no risk to the driver trainer.



Photograph 1: View from Unanderra platform looking South



Photograph 2: View looking South from the area of the incident

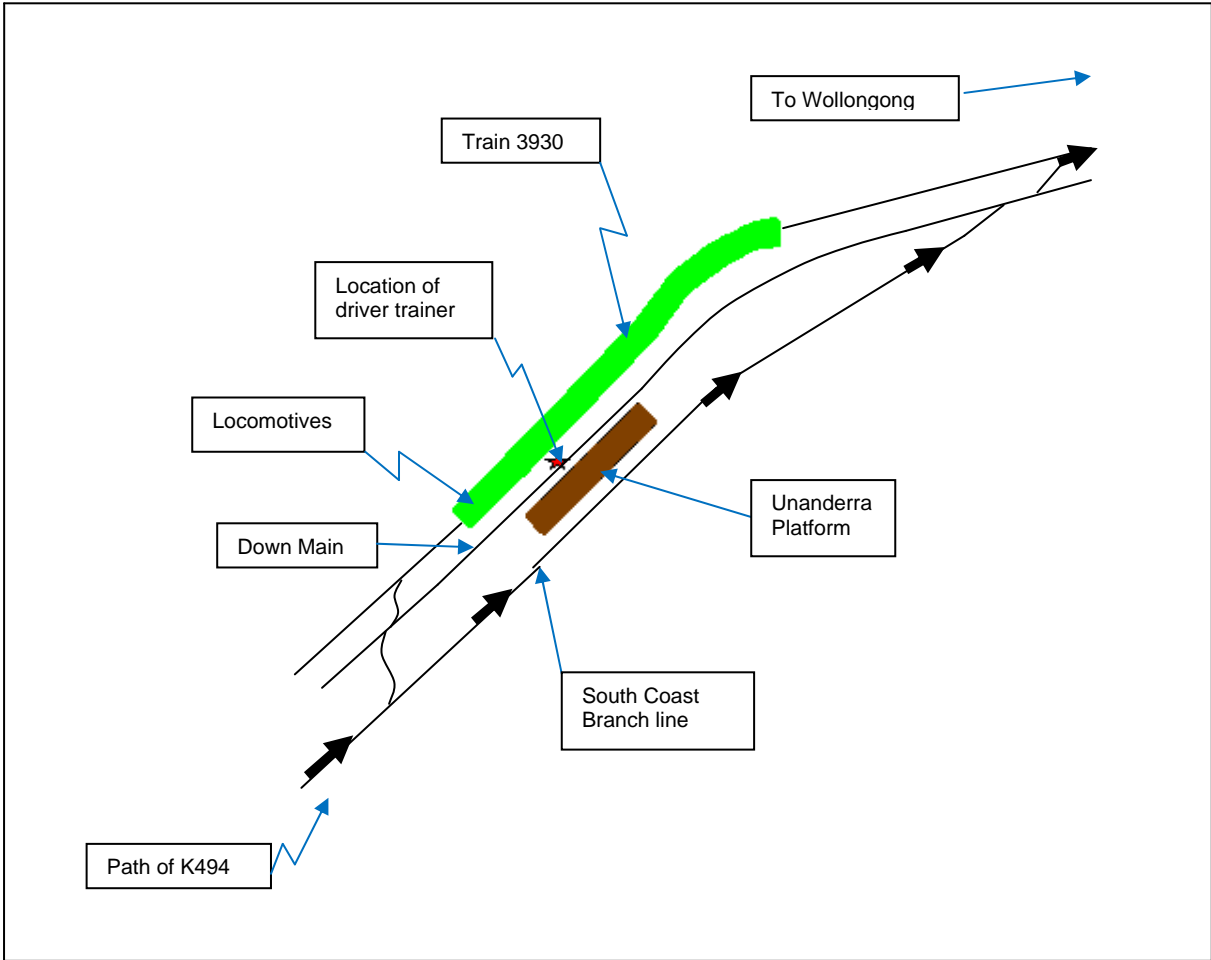


Figure 2: Unanderra incident site

- 1.36 The driver trainer then contacted the AC by mobile telephone. The voice tapes reveal that the driver trainer expressed his outrage at what had just transpired.
- 1.37 At 12:56:08am the driver trainer informed the AC via WB radio that the fourth wagon had no wheel damage but there was some wheel scale on the second and third wagons; the condition of these wagons was such that the train could travel at normal speed. The driver trainer advised the AC that train 3930 was ready to depart.
- 1.38 The AC cleared the signals to allow train 3930 to depart Unanderra towards Nowra.

Incident Response

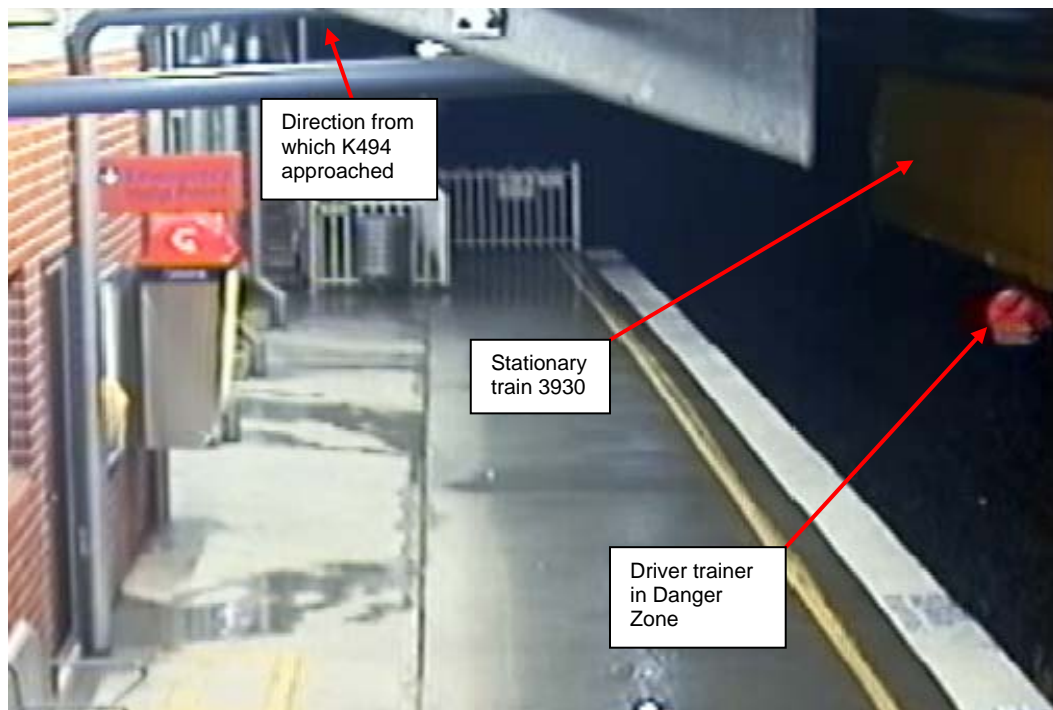
- 1.39 At 12:56:47am the AC called the train controller and informed him about the wheel scale found on two wagons and that 3930 was 'on the move'. The train controller was concerned about the report of scale and directed the AC to stop the train until the severity of the scale was confirmed. The AC did not mention the earlier call (referred to in paragraph 1.36) from the driver trainer.
- 1.40 At 12:57:50am the AC instructed the crew of 3930 to stop the train and to contact the train controller about the wheel scale. The crew brought 3930 to a stand as directed.
- 1.41 At 01:00:40am the driver trainer called the train controller to confirm the condition of the wagons prior to departure from Unanderra and, during this conversation, reported the incident. The driver trainer also reported the incident to his management at Pacific National who then notified OTSI.
- 1.42 The train controller questioned the AC about the conversation with the driver trainer and it was determined, with the RMC Shift Manager, that the alleged incident should be further investigated once a Network Operations Superintendent (NOS) came on duty.
- 1.43 The NOS listened to the voice tapes of the incident at about 12 noon and determined that an incident had occurred. A decision was taken to "*relieve (the) Wollongong AC from safeworking duties to assist with (the)*

investigation". No drug or alcohol testing was conducted due to the time that had elapsed between the incident and the review of the voice tapes.

- 1.44 RailCorp conducted an internal safety investigation and a Level 5 Investigation Report was finalised on 13 December 2011. This investigation focussed on the fact that the AC had "issued a Controlled Signal Block ... without informing the South Coast Train Controller". The AC was subsequently recertified using RailCorp's course "WX32 Signaller Recertification Training" on 15 December 2011.
- 1.45 Pacific National offered counselling to the crew of 3930 and it was taken up by the driver trainer.
- 1.46 Pacific National did not carry out any further investigation into the incident as OTSI had indicated that it would be conducting an independent investigation.

Environmental Conditions

- 1.47 The incident occurred during the hours of darkness and heavy rain was being driven by a strong wind which reduced visibility. The driver trainer reported that it made working conditions somewhat difficult and unpleasant (see *Photograph 3*).



Photograph 3: Working environment at the time of the incident: dark and wet

Injuries and Damage

1.48 There was no damage as a result of this incident and there were no physical injuries.

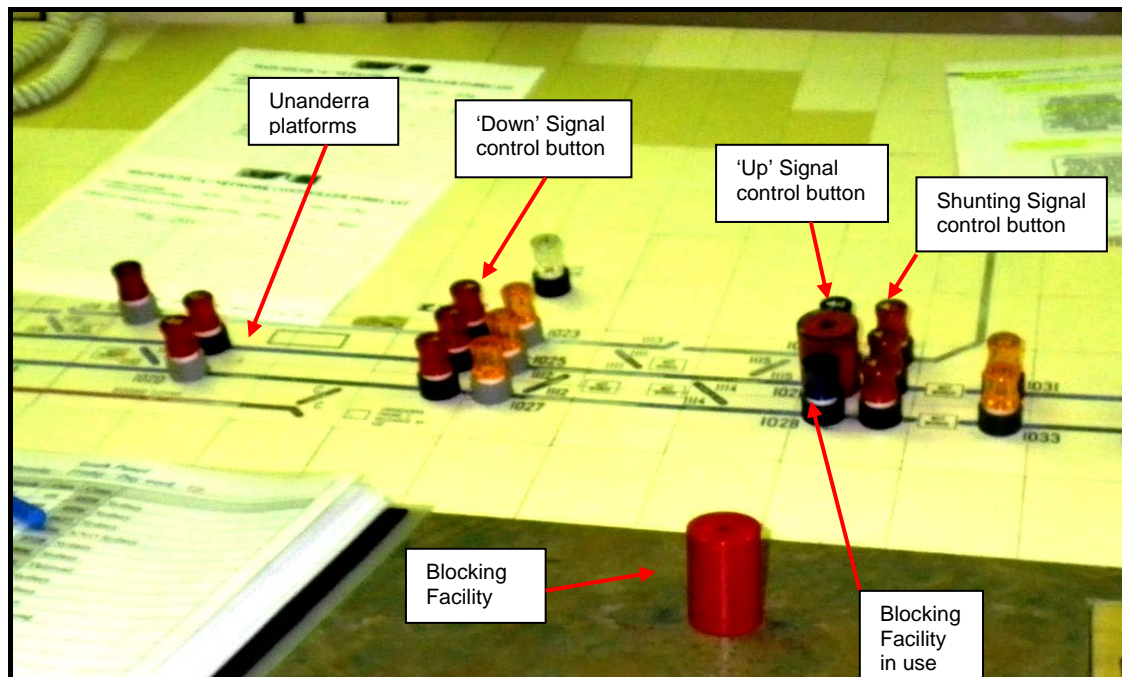
Train Information

1.49 Train 3930 was operated by Pacific National, a division of Asciano Limited. It was travelling from the Manildra flour mill at Narrandera, bound for Manildra's facility at Bomaderry. Train 3930 consisted of 28 grain wagons, 22 loaded and six empty, hauled by two 81 Class locomotives. The train had a total mass of 2041 tonnes and a length of 454 metres.

1.50 Pacific National reported that the train had been inspected prior to departing Narrandera with no defects found. En route to Unanderra 3930 had no reported faults.

Signalling Equipment

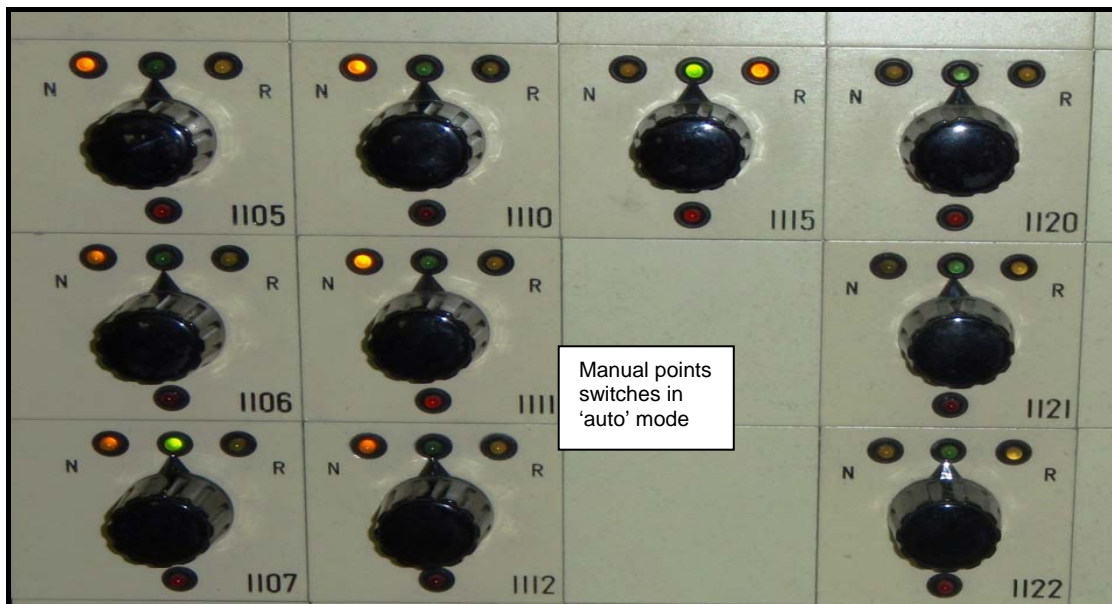
1.51 The area controlled by the Wollongong Signalling Complex (WSC) is Rail Vehicle Detection territory with the presence and location of rail traffic being detected by track circuits. The power-operated points and signals used for the movement of rail traffic through the area are controlled from the WSC.



Photograph 4: Unanderra signalling panel

The system used is 'route set relay interlocking', the equipment having been installed in the early 1980s. Routes are set by pressing the relevant signal control button on the desired route followed by its 'finish' button. The finish button is generally the next signal button in the same direction. Any sets of points on the route will automatically move to facilitate the required route and before the protecting signals clear.

- 1.52 If a signal or finish button must not be operated (e.g., if a signal is being kept at 'Stop' to protect a worksite) then a blocking facility, a red 'thimble', is placed over the button (see *Photograph 4*). Points can also be set manually or locked in one position by using the toggle switches provided (see *Photograph 5*). If the toggle is turned to the left or right the points will move to and lock in 'Normal' (N) or 'Reverse' (R) as indicated. While the system does record the movement of points and the state of signals (i.e., at 'Stop' or showing a proceed indication), it cannot record the placing of a 'thimble' nor does it record the manual locking of a set of points.



Photograph 5: Manual points switches

Network Rules and Procedures

- 1.53 The rules and associated procedures for working in the rail corridor are specified in RailCorp's Network Rules and Procedures. The rules pertaining to this incident are described and analysed in Part 2 of this report.

1.54 While the AC only had to have competency in the RailCorp network suite of rules, the train crew were required to operate in two different networks:

- RailCorp - network owner of the Metropolitan Rail Area; and
- ARTC - network owner of the Defined Interstate Rail Network (DIRN) and the Country Regional Network (CRN).

1.55 In January 2012 John Holland took over the CRN from ARTC, becoming the third network owner in NSW. All three infrastructure owners have network rules and procedures which contain differently specified operating requirements. This appears to be contrary to the intent of Part 5, Section 31 of the *Rail Safety (General) Regulation 2008* which prescribes:

“The object of this Part is to improve the safe development of network rules of rail infrastructure owners by:

(a) promoting the consistent development and implementation of network rules by rail infrastructure owners,

(b) facilitating co-operation between rail infrastructure owners to ensure that changes to network rules are effectively managed and implemented, and

(c) ensuring (so far as is reasonably practicable) that the same network rules apply to the whole of the NSW Rail Network.”⁶

Communications Systems

1.56 The train crew had three communication modes available at the time of this incident: CountryNet radio, mobile telephones and the open channel WB radio system.

1.57 A CountryNet radio is installed in each locomotive cab. At Unanderra this radio provided communications between the train crew and the South Coast train controller in the RMC. The AC at the WSC did not have access to CountryNet radio.

⁶ The term “network rules” as defined in Section 32 of the *Rail Safety (General) Regulation 2008* includes procedures relating to rail network operations, as adopted and made by rail infrastructure owners.

- 1.58 Mobile phone coverage at Unanderra is adequate and afforded the crew the ability to make and receive calls as required. However, Network Control Officers were not able to contact the crew by this means as they did not have their contact numbers.
- 1.59 The WB radio was available in each locomotive cab and the crew were also issued with portable handsets. While the WB system was intended to provide communications between crew members and between the crew and the AC, the condition of the equipment was such that the driver trainer did not have an operational handheld WB radio at the time of the incident because it had failed and the second radio, in the possession of the 2nd person, had a 'poor aerial' and was not used. Pacific National was aware of the deficiencies in these radios and the selection and purchase of new radios was already underway at the time of the incident. Pacific National has since advised that the procurement of the new radios has been completed.

Qualified Worker Information

- 1.60 Both crew members were Pacific National employees. The driver had been driving trains since 1986. He was both a driver trainer and team leader at Pacific National's Nowra Depot. His competencies and medical certification were correct and current at the time of the incident.
- 1.61 The 2nd person was also based at Pacific National's Nowra Depot and had been employed as a trainee driver and 2nd person for about two years. The 2nd person's competencies and medical certification were correct at the time of the incident. This incident shift was the last required by the 2nd person before being certified, by the driver trainer, as a fully qualified driver.
- 1.62 The AC had been employed as a signaller since 1979 and had worked in the WSC since 1986. He was qualified to operate all the signalling panels there. His competencies and medical certification were correct at the time of the incident.
- 1.63 The Train Controller's competencies and medical certification were correct at the time of the incident.

1.64 All qualified workers' fatigue levels were within industry guidelines.⁷ However, the AC had been called in for an unscheduled shift after having the previous two days off duty. He was notified of the shift at about 3pm, some eight hours before the 11pm start time. This afforded the AC some opportunity for rest and, at interview, he stated that he was not tired at the time of the incident.

⁷ Both Pacific National and RailCorp use FAID.

PART 2 ANALYSIS

Background

2.1 The driver trainer had inspected the first three wagons as part of the modified brake test after the locomotives were reattached and, in response to the information from the member of the public, he had also inspected the fourth wagon. Inadvertently, however, he only informed the AC that he had inspected the first three wagons. (At interview he stated that he was sure that he had said “four wagons” but, having listened to the audio tapes, he agreed that he did not.) This led to the direction from the AC to check the fourth wagon. As this was the 2nd inspection of the fourth wagon, the driver trainer decided to make it worthwhile by inspecting the other side of the wagon. To do so, it was necessary to access the danger zone on the adjacent Down Main line.

Planning, Selection and Implementation of Safeworking Method

2.2 In the case of train crew being required to inspect their train on a running line, little prior warning is generally available. However, before entering the danger zone to carry out work, the requirements of Network Rule NWT 300 *Planning work in the Rail Corridor* must be fulfilled. This requires the Protection Officer (in this case the driver trainer) to;

- make a safety assessment,
- make sure that the work is done safely, and
- keep records about protection arrangements.

The driver trainer did not make “records about protection arrangements” as required by NWT 300.

2.3 If the inspection could be carried out from a safe place (e.g., the cess or a platform) then no formal work method was required. If, however, access to the danger zone on an adjacent line was required then, generally, two work on track methods were available for train crew while inspecting their trains:

Lookout Working (as described in RailCorp’s Network Rule NWT 310) or CSB (as described in NWT 308).

- 2.4 For this location the driver trainer assessed that ‘Lookout Working’ was not suitable to access the danger zone. This was because, in a Northerly direction from the Down Illawarra Main line, visibility was restricted by an eastward curve in the line and obscured by structures on the station platform (see *Photograph 6*). Additionally, a suitable safe place was not readily available. At interview the driver trainer noted that he “*would not have left the cab without CSB*”.



Photograph 6: View looking North from incident site

- 2.5 Whichever method is selected, there are a number of forms available in RailCorp’s Network Procedures to assist the protection officer (PO): NRF 014 *Pre-Work Briefing*, NRF 015A *Worksite Protection Plan* and NRF 015B *Worksite Protection Plan for Lookout Working*. NRF 014 “*is used by the Protection Officer to document the details of what must be delivered in the pre-work briefing*”. NRF 015A “*must be used for all work except that performed under NWT 310 Lookout Working*” in which case Form NRF 015B must be used. According to the introduction to the “*Worksite Protection Plan*” section, these forms (015A and 015B) are used by POs to record “*details*”

about work in the Rail Corridor” to comply with NWT 300. However, the forms are not referenced in the associated Network Rules and Procedures.

- 2.6 These forms were not available to the crew of 3930 at the time of the incident, nor had they been trained in their use. In common with other operators, Pacific National has an access agreement with RailCorp which, among other things, obliges Pacific National to comply with RailCorp’s Network Rules and Procedures. Forms NRF 015A and 015B were included in the Procedures in December 2010 and their appropriate use is therefore implied under the access agreement from that time. However, Pacific National had not taken steps to introduce the form into their operations.
- 2.7 RailCorp is the only network owner in NSW to include these forms in its Network Rules and Procedures and RailCorp’s Network Rules Section advised in February 2012, and confirmed in August 2012, that it was their opinion that the train crews of operators such as Pacific National should use the forms. RailCorp subsequently advised that their train crews have not been required to use these forms either prior to setting up Lookout Working or CSB worksites or under absolute signal blocking (ASB) that replaced CSB in the RailCorp network in July 2012.
- 2.8 The Network Rules and Procedures for the implementation of CSB were not fully observed by the driver trainer or the AC. There was no confirmation that *“protecting signals have been set at stop with blocking facilities applied”* nor was there any discussion about or confirmation that *“there is no rail traffic approaching the worksite”*, as required by NWT 308. The AC authorised CSB by stating only *“I’ll give you a CSB on that road next to you on the, ah, Down Main there at 46 there over”*. The AC also granted the request for CSB immediately without reference to the train controller. Neither the driver trainer nor the 2nd person noticed that the CSB had been authorised without reference to the train controller and accepted that the correct protection was in place.
- 2.9 The AC told the train controller that he had placed blocks on signals 1012 and 1025. These signals control the egress of rail traffic from the area requiring protection, not access. However, as their controls have the additional function

of being 'finish buttons' for routes set into the area, the placing of blocks on these signals did give effective protection against setting a route into the worksite occupied by the driver trainer. Evidence suggests that these blocks were maintained throughout the period that crew members of train 3930 were in the danger zone and, consequently, they were never in physical danger.

Network Rules and Procedures

- 2.10 RailCorp's Network Rule NWT 308 *Controlled signal blocking* (CSB) and Network Procedure NPR 703 *Working using controlled signal blocking* set out the requirements for using this method of protection. For "*minor repairs to rail traffic*" CSB protection could be provided by means of placing one signal at stop to prevent rail traffic from approaching. In this case one worker, generally a member of the train's crew, could work alone. The worker did not require a lookout and was not required to have a safe place to retire to if rail traffic approached. These requirements were less stringent than for other CSB uses where two signals would have to be placed at stop or, if only one signal was used, additional safety arrangements would have to be put in place. All other requirements of the CSB rules and procedures applied equally in the case of "*minor repairs to rail traffic*". CSB required there to be suitable controlled signals available to prevent the approach of rail traffic. Such suitable signals were available at Unanderra and the method was suitable for the work being performed.
- 2.11 In conjunction with Network Rule NWT 308 was Network Procedure NPR703 *Working using controlled signal blocking*. The procedure generally mirrored NWT 308 in its explanation of protection requirements. The rule stated that the "*Signaller may authorise CSB by: setting and keeping controlled signals at STOP with blocking facilities applied to the signal controls*" (one option of two, the other not being relevant to this incident).
- 2.12 Network Rule NSG 614 *Blocking Facilities* "*prescribe(s) the rules for using blocking facilities*". This rule states that blocking facilities prevent "*unintended issues of proceed authorities, or signalling or point equipment operation*." However, the rule does permit the "*temporary removal*" of blocking facilities

under some, defined, circumstances such as “*to set a different route using the same controls*”.

- 2.13 In practice, there are a number of additional ways that a signal can be placed at STOP depending on the technology in use. For example, a block can be placed on a finish button (as the AC did in the Unanderra incident), a track circuit or a set of points. In these cases, while it might be possible to clear a protecting signal, it cannot be cleared such that it directs rail traffic into the worksite. However, this would not be consistent with the CSB rule which states that CSB may be authorised by “*setting and keeping signals at STOP with blocking facilities applied to the signal controls*”, i.e., there is no option to allow the temporary removal of blocking facilities.
- 2.14 The Rail Industry Safety and Standards Board⁸ (RISSB), a national body, is developing a suite of Australian National Rules and Procedures (ANRP) which combines current practices in the various jurisdictions. The suite includes: ANRP 6003 *Blocking facilities*, ANRP 3011 *Absolute Signal Blocking* and ANRP 3012 *Using Absolute Signal Blocking*. There appears to be an inconsistency between the ASB procedure (3012) and the Blocking Facilities rule (6003). ANRP 6003 permits the removal of blocking facilities temporarily to “*set a different route using the same controls*” while ANRP 3012 states, in its introduction: “*ASB is a method of working in the Danger Zone by maintaining controlled absolute signals at Stop*”. This would have the effect of excluding the possibility of a temporary removal of blocking facilities while ASB is in force, as otherwise permitted under ANRP 6003.
- 2.15 RailCorp adopted the ASB nomenclature in a change to its Network Rules and Procedures that came into force on 15 July 2012. There are some differences, with direct relevance to this investigation, between the RailCorp ASB rules and procedures and those for CSB which they replace. Firstly, RailCorp has added an option for “*manual points control mechanisms to be used to set controlled absolute signals at STOP*” for protecting work. Secondly, while the

⁸ The Rail Industry Safety and Standards Board (RISSB) is a not for profit company, wholly owned by the Australasian Railway Association, and is responsible for the development and management of the rail industry standards, rules, codes of practices and guidelines, all of which have national application.

CSB procedure directed that the signaller set and keep “*controlled signals at STOP with blocking facilities applied*”, the current ASB text reads:

- “*Placing controlled absolute signals at Stop, and*
- *Applying blocking facilities to prevent the clearing of signals that allow entry to the proposed work location*”.

However, the following passage has also been included:

“NOTE Before clearing a protecting signal for a different route, the Protection Officer and Signaller must ensure that the worksite is not established at a location where rail traffic using the different route can enter the worksite”

This passage enunciates the intent that a signal, being used for protecting an ASB worksite, can have blocks removed and be cleared for another route in line with Network Rule NSG 614 *Blocking Facilities*. Neither the previous CSB rule nor the current RISSB documents include this note.

2.16 At the time of the incident, RailCorp’s CSB rules and procedures did not explicitly state that blocking facilities on something other than a controlled signal (such as points or a finish button) could be used to implement CSB. Similarly, neither the CSB rule nor procedure sanctioned the temporary removal of a blocking facility. However, the practices were accepted as providing practical methods of applying and managing CSB. These anomalies have been removed with the introduction of the new ASB rule.

2.17 Practical advice was issued by RailCorp’s Network Rules Section on the application of CSB in the ‘SafeTracks’ bulletins of September 2010 (Issue 10) and May 2012 (Issue 5):

- September 2010 (Issue 10). This bulletin, under the heading “*what information is required by the Signaller (AC)*” states that the AC must be told “*the particular method of CSB required (e.g., two consecutive controlled signals or one controlled signal with a Lookout and a safe place)*”. However, there is no mention of the ‘particular method of CSB’ available to ‘protect minor repairs to rail traffic’ as applicable in the Unanderra incident.

- May 2012 (Issue 5) titled “Recent Safeworking Determinations”. This bulletin specifically states “*If blocking facilities can be placed on ... the finish button (such that the signal cannot be cleared for the protected route) then there is no reason why CSB cannot be applied*”. However, shortly after its publication and coincidental with industrial relations issues, this bulletin was “*temporarily withdrawn ... pending further consultation with industry stakeholders*”. RailCorp has advised that there are no plans to reissue the bulletin as the new ASB rule and procedure largely clarify the issues that the ‘SafeTracks’ Bulletin sought to address, although the specific issue of using ‘finish buttons’ is not canvassed.

Communications

- 2.18 In its introduction, Network Procedure NPR 721 *Spoken and written communication* states that “*Effective written, radio and telephone communication is essential for safety in the Rail Corporation (RailCorp) Network*”. Network Rule NGE 204 *Network communications* requires that, for a work on track method (such as CSB), verbal communication is to be confirmed: “*the receiver must confirm the content of a message by repeating the message back to the sender*” and further, “*the receiver must not act on the communication until the sender confirms that the message has been repeated correctly*”. Further specific information exchange protocols were contained in the CSB rules and procedures.
- 2.19 The driver trainer used the correct title “Controlled Signal Blocking” when requesting CSB rather than ‘CSB’ or the commonly used jargon ‘blocks’ or ‘blocking’ when requesting protection, and the AC replied “CSB”. The AC also used the term ‘CSB’ in his subsequent conversation with the train controller. However, in general, the communication between the various parties during the incident sequence did not meet the required standards.
- 2.20 There was no explicit confirmation about where the blocking facilities had been applied; the verbal procedure required to establish CSB was not followed; and the AC omitted the step of speaking to the train controller prior to authorising the CSB.

- 2.21 For “open-channel communications” (e.g., WB radio) Procedure NPR 721 directs that “standard terms” are used. The procedure contains a table of “standard terms” with specific meanings to be used. The word ‘protection’ is not included in this list. However, it is listed in the RailCorp Network Rules Glossary with two specific meanings: “*protection: The means used to prevent rail traffic from entering a worksite or other portion of track or to prevent road or pedestrian traffic from entering a level crossing*”. In conversations between the AC and the train controller, “protection” was taken to mean the method of ‘work on track’; in this case CSB or Lookout Working. Under Lookout Working, no ‘protection’ is provided, with a Lookout only providing warning of approaching rail traffic. Therefore, to be consistent with the Glossary definition, the word ‘protection’ should not be applied to Lookout Working.
- 2.22 The AC altered the “safety arrangements” in communication with the 2nd person who was not the PO. In conformity with other work on track methods, the PO “*must be the only person to speak to Network Control Officers about safety arrangements*”. The driver trainer was the PO but he was not included in this conversation. In actuality, this conversation, and the fact that CSB was terminated, made no practical difference to the protection afforded to the driver trainer as evidence suggests that the AC maintained the blocks on the signalling equipment at all times. However, the train crew had no way of knowing this.
- 2.23 When he altered the safety arrangements, the AC did not pass on the information that K494 was nearby and approaching the area. While there was no requirement to do so, the AC should have been aware of the train’s approach and the likely impact it could have had on the train crew, one of whom was in the danger zone, although not in the direct path of K494.

Training, Experience and Recertification of Area Controller

- 2.24 The AC was trained in the requirements of all work on track methods, including CSB.
- 2.25 It was established at interview that the AC did not fully understand the requirements of the CSB rules and procedures, particularly in respect of the particular instance where CSB is required to “*protect minor repairs to rail*

traffic". The AC also stated that he did not need to tell the crew of the approaching K494 as he had not removed the 'blocks'. However, he had arranged with the train crew that they would use Lookout Working for which no 'blocks' were required. The interview was conducted after the AC had been recertified as competent by RailCorp.

- 2.26 While the AC estimated that he authorised a CSB every four or five days (usually to signal electricians or civil infrastructure workers), he stated that he rarely authorised CSB to protect train crew: "*This would be the first one that I can remember, very rare*". It was therefore an infrequent task for the AC.
- 2.27 It is possible that the AC, presented with an unfamiliar scenario, reverted or 'regressed' to an earlier learned routine.⁹ (Protecting the crew as he did was an accepted method prior to the introduction of the CSB work on track method.) This 'regression' was made more likely by the AC's incomplete knowledge and understanding of the current CSB rules and procedures (see Paragraph 2.25). "*People may have been trained in ways that leave out important bits and pieces. The result is buggy knowledge, or a buggy mental model (with gaps, holes and bugs in it)*".¹⁰ When confronted with the requirement to protect the driver of 3930 on the Down Main line, it is likely that the AC implemented a safe system of work by applying blocking facilities to two items of signalling equipment. However, it appears that he did not consider complying with the full requirements of NWT 308. This may be explained by the AC relying on the earlier learned routine. While the AC's training, knowledge and experience indicated to him that the system was safe, on reflection he did not believe that it complied with the current requirements of network rules and procedures. When challenged by the train controller, he became confused and denied that CSB had been authorised.
- 2.28 The AC was recertified using RailCorp's course "WX32 Signaller Recertification Training" on 15 December 2011. The process included a review of the Level 5 Investigation and a Just Culture Review. The Level 5 Investigation focussed on the fact that the AC had "*issued a Controlled Signal*

⁹ *Sidney Decker, The Field Guide to Understanding Human Error*, TJ International Ltd., Padstow, Cornwall 2006, page 142: "*regression – the tendency to revert to earlier learned routines even if not entirely appropriate to the current situation*".

¹⁰ *Ibid*, page 145.

Block ... without informing the South Coast Train controller” and the review, using RailCorp’s ‘Just Culture framework’, concluded that the AC’s actions were an “at-risk violation” of RailCorp Network Rules and Procedures. RailCorp’s Just Culture Policy defines ‘at-risk behaviour’ as “*drifting from desired behaviour not recognising the risks involved*”. Evidence provided by RailCorp indicates that this recertification, though thorough in nature, did not identify or address all the factors specifically associated with the incident. The introduction to WX32 states that the recertification “*is predominantly candidate-driven with support and assessment by qualified trainers*” which implies that the recertification may not have been sufficiently tailored to the needs of an individual’s circumstances by recertification staff.

Training and Experience of Train Crew

- 2.29 Pacific National train crews are provided with training in CSB as part of their initial training and also during recertification at three yearly intervals.
- 2.30 The process is classroom-based with an oral assessment and “*can include the task of applying a CSB*”. Both crew members of train 3930 indicated at interview that they had not been required to apply, or simulate the applying of, CSB during training or recertification.
- 2.31 The driver trainer estimated at interview that he had had to request CSB once every “*three to five years*”, and so it was an infrequent task for him. When asked if he considered his request for CSB had been performed correctly, he replied: “*It’s the way I’ve always done it*”. The driver trainer did re-read the rules after the incident.
- 2.32 The crew had never used or been trained in the use of the Pre-work Briefing or Worksite Protection Plan forms specified in the RailCorp Network Procedures.

Compliance with Network Procedures

- 2.33 Pacific National did not comply with RailCorp’s Network Procedures in relation to the use of either Form 015A or 015B as it was required to do under its access agreement.

- 2.34 RailCorp did not comply with its own Network Procedures as it had not introduced either Form 015A or 015B for use by its own train crews.
- 2.35 RailCorp has suggested the best way to resolve the apparent impasse on the matter of use of the forms may be to undertake an assessment of the “*most effective approach to ensuring train crew safety when using absolute signal blocking or lookout working*”. Pacific National has indicated a willingness to work with RailCorp to determine the requirement or otherwise for their train crew to use the forms and to arrive at “*the most effective method to record protection arrangements*”.
- 2.36 The requirements of NGE 204 Network Communications were not fully complied with by either the AC or the train crew.

Previous Incidents

- 2.37 A review of recent OTSI rail safety investigations revealed a number of features similar to those found in the Unanderra incident.
- 2.38 On 29 October 2009 there was a near miss between a train and a Pacific National train crew member at Glenlee.¹¹ This incident occurred when train crew were required to inspect their train using CSB for protection. OTSI investigated the incident and the report includes the following observations:

“There was no explicit confirmation about where the blocking facilities had been applied.”

Standard terms and protocols were seldom used during the safety critical communication in this incident, as required by Network Procedure NPR 721 Spoken and Written Communication. In 14 communications analysed in relation to this incident there was an absence of standard terms and correct procedures.”

“In general, the tone of all communications was informal and there was a non-adherence to existing safety critical communication protocols.”

¹¹ OTSI Rail Safety Investigation Report, *Safeworking Breach, Glenlee, 28 October 2009*, available at www.otsi.nsw.gov.au

This investigation identified poor communications of a comparable nature to that at Unanderra among the contributory factors.

2.39 Two other incidents have been identified, since 2009, which also involved train crews and CSB:

- On 13 May 2010 a CSB was required to allow the crew of a Pacific National freight train to investigate a report of a dragging strap. It was reported to the AC that a member of the crew had entered the danger zone before CSB was requested and this was compounded by the AC applying a block to a signal that did not provide protection to the full area required. The CSB was incorrectly applied and the procedures required for its introduction were not followed by the AC or the train crew.
- On 25 January 2011 a Pacific National train crew was requested to inspect their train after a line-side monitor registered a “warm alert” on one of its axles. CSB was required on an adjacent line to allow this inspection to take place. However, due to poor communication and the lack of adherence to procedure by both the AC and the train crew, a member of the crew entered the danger zone without any protection in place and a train travelled through the area on the line which should have been protected by CSB. The RailCorp investigation noted “*the signaller exhibited a poor grasp of the principles of CSB*”.

2.40 On 13 April 2010 there was a track worker fatality at Kogarah.¹² The track worker had been in the danger zone under the CSB work on track method and was struck by a RailCorp train. The report’s Executive Summary states, in part:

“In addition to the procedural omissions in implementing CSB, the investigation identified a lack of rigour in complying with the requirements of Network Rules and Procedures involving communication protocols and the planning, briefing and documenting of worksite protection.” and;

¹² OTSI Rail Safety Investigation Report, *Track Worker Fatality, Kogarah, 13 April 2010*, available at www.otsi.nsw.gov.au

“The recorded voice communications were informal and conversational and not in accordance with Network Rules and Procedures, particularly in relation to the handling of safety critical information. This was despite RailCorp publishing information bulletins emphasising the importance to safety of effective communications and the ITSR targeting communication protocols in its audit and inspection programs.”

- 2.41 The accident described above possesses marked similarities to other CSB incidents including the one at Unanderra. The ITSR issued a Rail Industry Safety Notice (RISN No. 30) in response to the Kogarah incident highlighting the responsibilities of both signallers (area controllers) and protection officers to adhere to the prescribed procedures when implementing CSB with the “action” item that *“accredited operators and rail infrastructure managers should ensure that all personnel who might apply CSB are aware of, understand, and apply these requirements”*.
- 2.42 Recommendations in the Kogarah Report directed to RailCorp included:
- *“Initiate a program of random audits on the implementation of worksite protection across the network to confirm conformance with the relevant policies, rules and procedures”*; and
 - *“Develop and implement policy guidelines and procedures for dealing with non-compliance with its network communication protocols and for maintaining the record of actions taken to deal with non-compliance. “*
- 2.43 Again, on 5 May 2010 there was a fatality near Newbridge in regional NSW when an excavator was struck by a RailCorp passenger train. The work on track was being conducted using a Track Occupancy Authority (TOA) which is regarded as providing a higher level of protection than CSB. The incident was investigated by the Australian Transport Safety Bureau (ATSB)¹³ and examined at an inquest conducted by the Coroner’s Court. Just as had been found in previous CSB / train crew incidents, and again at Unanderra, the factors that contributed to the Newbridge incident included poor

¹³ ATSB Transport Safety Report, *Collision between an XPT passenger train and a track-mounted excavator near Newbridge, NSW, 5 May 2010*, available at www.atsb.gov.au

communication and information exchange protocols. In addition, it was found that the form used as part of the TOA authorisation process did not support adherence to the required information exchange protocols stipulated in the Network Procedures. In response, ARTC introduced a new TOA form. It is noted that CSB/ASB had/has no 'supporting form' to guide the information exchange during its request and authorisation.

- 2.44 ITSR's Rail Industry Safety Report 2010-11 states that "*Over 150 notified occurrences in 2010-11 involved significant failures in the systems governing the safe operation of trains and protection of workers on track*". It noted that while "*there were no fatalities ... there were several near miss occurrences where collisions between trains and people were only narrowly avoided*". The Report noted, in regard to "procedural methods" that "*railway staff are required to work to these procedural methods only occasionally, and will have less experience and familiarity with the system compared to the normal signalled system of safeworking. This increases the likelihood that something will be missed or overlooked*". While the report is referring to degraded working (where the normal signalling system becomes unavailable) it is relevant to the Unanderra incident as CSB/ASB is a 'procedural method' and both driver trainer and AC stated, at interview, that CSB to protect train crew was a procedure which required implementation infrequently.

PART 3 FINDINGS

Summary of Findings

3.1 The investigation established that the incident occurred because the communications protocols and the specific procedures, including information exchange protocols, contained in RailCorp's CSB Rules and Procedures that were in force at the time, were not adhered to.

Contributing Factors

3.2 Verbal communication did not conform to the requirements of RailCorp Network Rule NGE204 *Network communication*, Network Procedure NPR721 *Spoken and written communication* or the requirements of the CSB (now ASB) rules and procedures.

3.3 Evidence suggests that the AC may have relied on an earlier learned routine to provide practical protection to the driver trainer on the Down Illawarra Main line which did not conform to the letter of the prevailing Network Rules and Procedures. He was unable to clarify what 'protection' had been requested by the train crew, and which he had authorised, when challenged by the train controller.

3.4 The AC's knowledge of the CSB rules and procedures was incomplete, and he lacked familiarity with applying it, particularly in relation to the infrequently performed task of protecting train crews.

3.5 The train crew did not have access to reference documents to check how CSB (an infrequent task for them also) should be requested and implemented. Additionally, they did not have access to the worksite protection plan form (NRF 015A).

3.6 Pacific National was unaware that their train crews were required to use Form NRF 015A (or NRF 015B for lookout working) and had therefore taken no steps to provide the forms, or training in their use, to train crews.

3.7 The AC conferred with the 2nd person about the safety arrangements without reference to the driver trainer who was the Protection Officer.

- 3.8 This lack of consultation was exacerbated by the fact that the driver trainer's handheld WB radio was unserviceable when he was outside the locomotive's cab.

Other Safety Matters

- 3.9 The reassessment of the AC did not address the exact circumstances of the incident. While the requirements for issuing CSB were covered in the assessment, the AC was recertified and returned to duty without his lack of a thorough working knowledge of the CSB rule being discovered or addressed, especially in relation to protecting trains using CSB.
- 3.10 The investigation into a fatal incident that occurred on 5 May 2010 at Newbridge, albeit under a different work on track method (a TOA), identified similar communications issues that were present in both the Unanderra incident and other train crew / CSB incidents. This may be indicative of a general lack of adherence to communication protocols in the rail industry and may warrant systemic investigation.
- 3.11 The RISSB Australian Network Rules and Procedures for ASB and Blocking Facilities contain similar inconsistencies to the previous RailCorp CSB rule in that the ASB rule appears to preclude a signal, being used for protecting an ASB worksite, having its blocks removed and being cleared for another route, while it is permitted in the 'Blocking Facilities' rule.
- 3.12 Despite the inclusion of forms NRF015A and 015B in current Network Procedures, they are not being used, or being required to be used, by drivers operating on RailCorp's network, including RailCorp's own drivers. However, both RailCorp and Pacific National have expressed a willingness to resolve this anomaly.
- 3.13 There are differences in the Network Rules and Procedures of the NSW infrastructure network owners, e.g., CSB/ASB, Lookout Working and inclusion or otherwise of worksite protection plan forms. This represents a potential safety risk for rail safety workers such as train crew who may work across the three NSW networks, and appears to be contrary to the intent of Part 5, Section 31 of the *Rail Safety (General) Regulation 2008*.

PART 4 RECOMMENDATIONS

To improve operational safety and prevent a recurrence of this type of incident, it is recommended that the following remedial safety actions be undertaken by the specified responsible entities:

RailCorp

- 4.1 Review the triggered recertification process used to recertify the AC after this incident to determine if any lessons can be learnt to improve the process, e.g., including a thorough review of the circumstances of an incident/s which lead to the requirement to conduct the recertification.
- 4.2 Review progress on two recommendations currently outstanding from the OTSI investigation into the track worker fatality at Kogarah regarding random audits on the implementation of worksite protection and dealing with non-compliance with network communications protocols.
- 4.3 Review current programmes aimed at improving safety critical communications to ensure that they address conformance with communication and information exchange protocols.
- 4.4 In consultation with Pacific National and other operators, determine the most effective approach to ensuring train crew safety when using Absolute Signal Blocking and Lookout Working. Promulgate the outcome of these deliberations to all operators and amend Network Rules and Procedures accordingly.

Rail Industry Safety and Standards Board

- 4.5 Review RailCorp's ASB rules and procedures to determine if adopting any of their enhancements in national rules and procedures would remove apparent inconsistencies with the "Blocking Facilities" rule.

Pacific National

- 4.6 Work collaboratively in assisting RailCorp with determining the requirement or otherwise for train crews to use forms NRF015A and 015B and to determine an effective method for train crews to record work site arrangements.

- 4.7 Review the adequacy of safeworking reference material provided in its train cabs, especially for seldom used procedures such as ASB.
- 4.8 Review the training and application of safety critical communications to improve conformance with communication and information exchange protocols consistent with the requirements of Network Rules and Procedures.

Independent Transport Safety Regulator

- 4.9 Ensure that, so far as is reasonably practicable, network rules are consistent across the NSW rail networks in line with the requirements of Part 5 of the *Rail Safety (General) Regulation 2008*.¹⁴

¹⁴ This recommendation is consistent with recommendations made in OTSI's reports into incidents at Strathfield on 01 April 2010 and Bankstown on 29 October 2010.

PART 5 APPENDICES

Appendix 1: Sources and Submissions

Sources of Information

- Asciano Ltd
- Independent Transport Safety Regulator
- RailCorp
- Rail Industry Safety & Standards Board

Submissions

The Chief Investigator forwarded a copy of the Draft Report to the Directly Involved Parties (DIPs) to provide them with the opportunity to contribute to the compilation of the Final Report by verifying the factual information, scrutinising the analysis, findings and recommendations, and to submit recommendations for amendments to the Draft Report that they believed would enhance the accuracy, logic, integrity and resilience of the Investigation Report. The following DIPs were invited to make submissions on the Draft Report:

- Asciano Ltd
- Area Controller
- Driver Trainer
- Independent Transport Safety Regulator
- RailCorp
- Rail Industry Safety and Standards Board

Submissions were received from Asciano Ltd, the Independent Transport Safety Regulator, RailCorp and the Rail Industry Safety and Standards Board.

The Chief Investigator considered all representations made by DIPs and responded to the author of each of the submissions advising which of their recommended amendments would be incorporated in the Final Report, and those that would not. Where any recommended amendment was excluded, the reasons for doing so were explained.