KiwiRail

Emergency Procedures Manual:

Tunnels

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General

This manual contains the Trigger Action Response Plans (TARPs) and Duty Cards for the KiwiRail Emergency Management Plan - Tunnels.

It must be read in conjunction with that plan. The TARPs and Duty Cards for this EMP are detailed in Table 1.

Table 1

Ref	Event	TARP	Duty Cards
1	KiwiRail tunnel emergency	All	TC, NCM
2	Passenger train stopped/parted/disabled/overdue in a tunnel - unplanned (if a derailment, obstruction, collision, or mechanical failure has occurred, the tunnel timer alarm has been activated).	All	LE, TM, PO, TC, NCM, Infrastructure
3	Freight train stopped/parted/disabled/overdue in the tunnel – unplanned (if a derailment, obstruction, collision, or mechanical failure has occurred, the tunnel timer alarm has been activated).	All	LE, TC, NCM, Infrastructure
4	HRV, MTMV, or Infrastructure stopped, disabled, and/or overdue in the tunnel – unplanned (if a derailment, obstruction, collision, or mechanical failure has occurred, the tunnel timer alarm has been activated).	Infrastructure	LE, TM, PO, TC, NCM, Infrastructure
5	Injury / Medical event in a tunnel (maintenance activities)	Infrastructure	
6	Fire in a tunnel – passenger train	All	LE, TM, PO
7	Fire in a tunnel – freight train	All	LE
8	Fire in a tunnel – material or work site	Infrastructure	
9	Fire in tunnel – HRV or MTMV	Infrastructure	
10	Overhead wires		TC, NCM, NS, LE, TM, PO
11D	Passenger train tunnel evacuation	All	LE, TM, PO
11M	Metro Passenger train tunnel evacuation	All	LE, TM, PO
12	Re-entry recovery	All	TC, NCM, NS, LE
13	Passenger Support	All	NCM
14	CIMS Manager and Incident Management Team Roles	-	Rail Incident Controller, Incident Controller, Operations, Logistics, Planning/Intelligence, Administration, Portal Controller, Passenger Escort, Traffic Marshall

IMPORTANT

The Locomotive Engineer Duty Card role also applies to Remote Control Operators except references to “cross banded on Channel 4”, which does not apply to Remote Control Operators.

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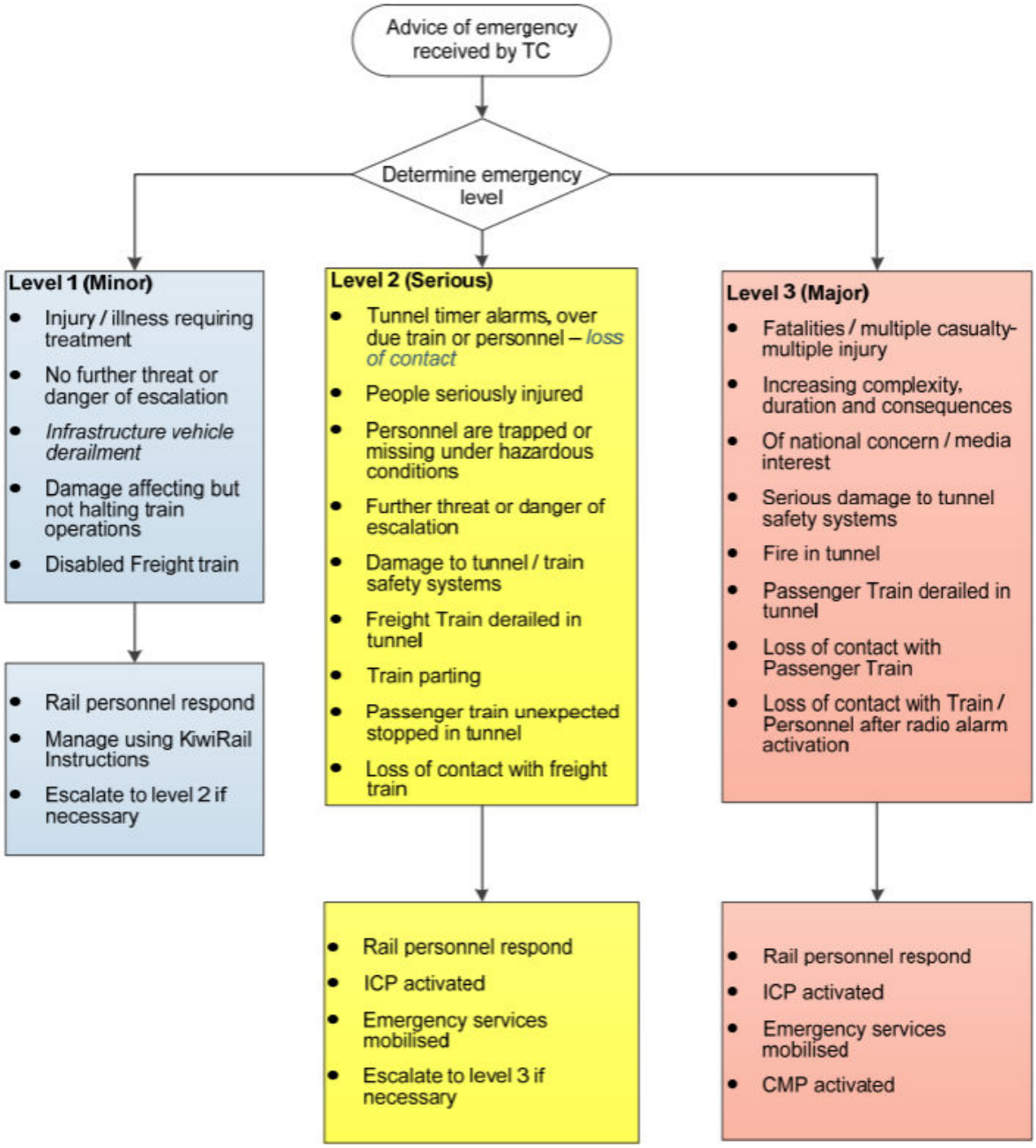
1. TARP 1 Tunnel Emergency



WARNING

After a fire/earthquake has occurred in a tunnel, the tunnel must be inspected, and the Infrastructure Manager must give clearance before any trains can enter the tunnel. See TARP 12 for the re-entry/recovery process.

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Duty Card 1.1 Train Controller

Level 1 Emergency declared

1. Contact LE/Infrastructure Personnel
2. Advise NCM
3. Monitor the situation and update NCM.

Level 2 Emergency declared

As for Level 1, plus:

1. Contact 111 – ask for Police and request activation of KiwiRail Tunnel Emergency Response (A2 continuation exposure may require an Ambulance/FENZ to supply oxygen treatment if no local oxygen is available)
2. Mobilise Infrastructure personnel to tunnel and activate ICPs
3. Secure the main line with appropriate track protection
4. If hazard from overhead and or other power cables, then isolate
5. If necessary, manage using train stopped/parted/disabled/overdue in Tunnel Duty Card 2.4
6. Monitor the situation and update the NCM.

Level 3 Emergency declared

As for Level 2.

IMPORTANT
If the train has unexpectedly stopped in a multi-line area - emergency protection must be applied.

Duty Card 1.2 Network Control Manager

Level 1 Emergency declared

1. Liaise with the Train Controller
2. Advise the LSM
3. Advise affected Infrastructure/Freight/Rail Passenger Operator Manager
4. Issue text advice to the National Rail Alert List
5. Liaise with the Infrastructure Manager if repairs are required
6. Monitor the situation and update all concerned.

Level 2 Emergency declared

As for Level 1, plus:

7. Ensure 111 is notified and the Tunnel Emergency Procedures are activated (A2 continuation exposure may require an Ambulance/FENZ to supply oxygen treatment if no local oxygen is available)
8. Appoint RIC (Duty Card 14.1)
9. Advise KiwiRail Communications, Legal, and Incident Investigators
10. Advise NZTA, WorkSafe
11. If necessary, manage using Duty Card 2.5 - train stopped/parted/disabled/overdue in Tunnel
12. If evacuation of passengers is needed, consider options in the following order and plan accordingly (see TARP 13):

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a. relief passenger train from the portal to the nearest station
b. bus transfer from the portal to the nearest station
c. relief train with freight wagons to transfer passengers from the portal to the nearest station (must be risk assessed)
d. helicopter transfer from the portal to the ground transport location.

Level 3 Emergency declared

As for Level 2, plus:

13. Activate the Crisis Management Plan
14. Direct the RIC to secure the site, if required.

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2. TARP 2 Passenger Train Stopped/Parted/Disabled/Overdue in Tunnel

Use when:

- derailment,
- collision,
- obstruction,
- mechanical failure or
- other event

has caused an unplanned stop in the tunnel.

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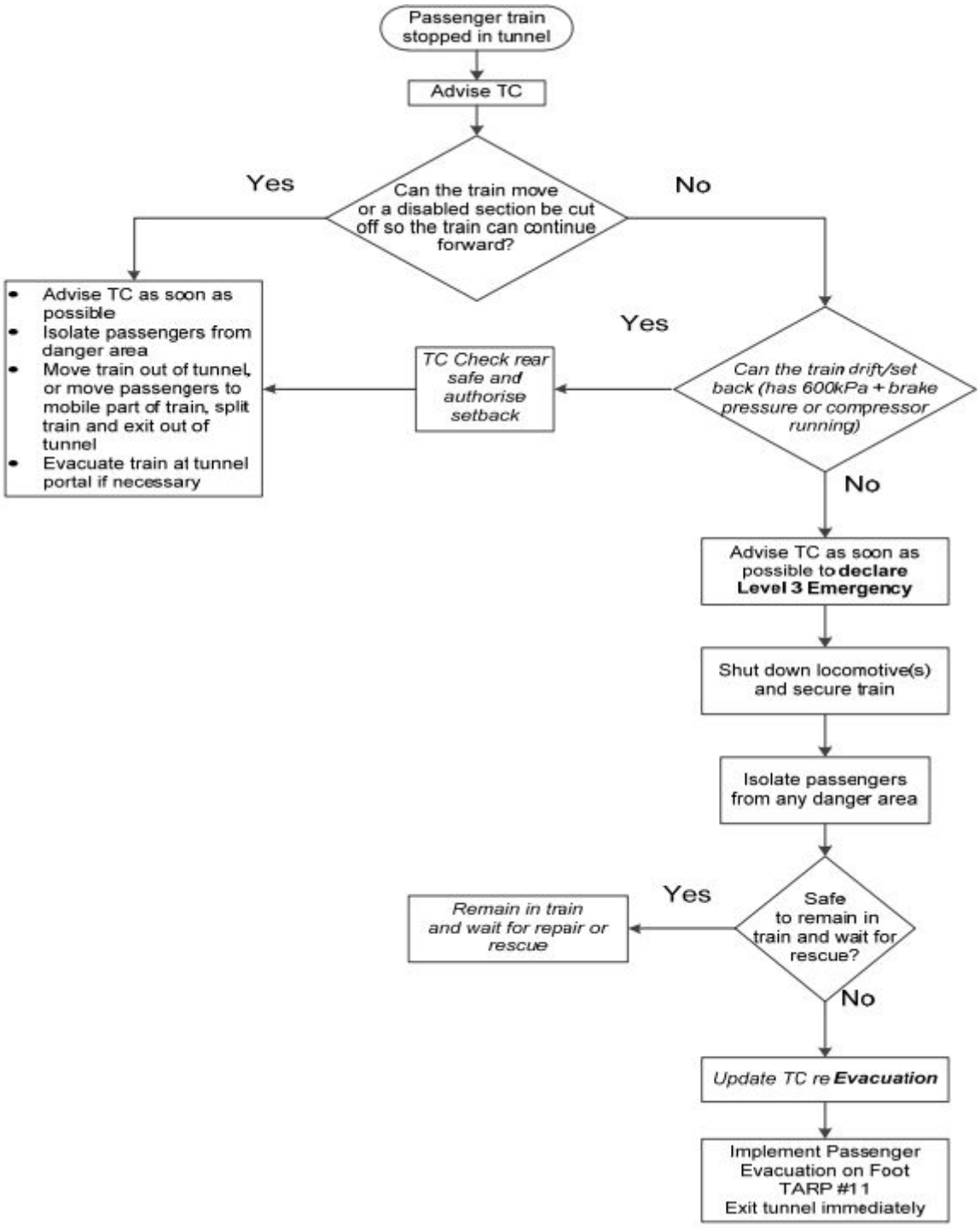

TARP 11 Metro shows additional requirements for electrified areas.

Duty Card 2.1 Locomotive Engineer

Passenger Train Stopped/Parted/Disabled Overdue In Tunnel

Italicised text applies for diesel or steam services, where required

1. Advise the Train Controller (if there is no initial response, use an emergency call)
2. Establish the reason for the stop and rectify if safe to do so
3. Discuss with the Train Manager options for splitting the train/exiting the tunnel
4. *If the train cannot be fixed or split, then shut down the diesel locomotive within 5 minutes of stopping*

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5. If necessary, exit the cab, *wear appropriate RPE*, and take: *a gas monitor*, torch, and portable radio - cross-banded on Channel 4*
6. Secure train with park brakes and/or hand brakes and chocks to prevent movement, if safe
7. Advise the Train Controller to initiate a rescue
8. Monitor the environment in the tunnel
9. *Continue to monitor tunnel gas levels, regularly rechecking and watching for escalations*
10. *Gas monitor levels:*
    a. *before the first alarm - passengers are to remain on the train until safe to transfer to the rescue train*
    b. *first alarm - investigate for possible cause & eliminate source if possible (if safe)*
    c. *second alarm - continue to investigate for possible causes, and if fire, activate Fire TARP 6.*
11. If evacuation is necessary, manage with the Train Manager and train crew according to evacuation TARP 11 and Duty Card 11.1.

CAUTION
When exiting the locomotive, be aware of hazards, sharp edges and wires above the locomotive and on the tunnel walls.

* Cross-banded on Channel 4 does not apply to Remote Control Operators

Duty Card 2.2 Train Manager

Passenger Train Stopped/Parted/Disabled Overdue In Tunnel

Italicised text applies for diesel or steam services, where required

1. Liaise with LE, Passenger Operators and Train Controller
2. *Shut down the generator within 5 minutes of stopping*
3. Consider LE options of splitting the train and exiting the tunnel.
4. If exiting the train, *wear appropriate RPE* and take a *gas monitor*, torch, portable radio
5. If LE is incapacitated, secure the train to prevent movement
6. Communicate with passengers
7. Identify any unaccompanied children, elderly, disabled, and injured people, and administer first aid, if necessary
8. Consider asking able passengers to assist those less able
9. Ensure the safety of passengers and personnel is accounted
10. Monitor the environment in the tunnel
11. *Continue to monitor tunnel gas levels, regularly rechecking and watching for escalations*
12. *Gas monitor levels:*
    a. *before the first alarm - passengers are to remain on the train until safe to transfer to the rescue train*
    b. *first alarm - investigate for possible cause & eliminate source if possible (if safe to do so)*
    c. *second alarm - continue to investigate for possible causes, and if fire, activate Fire TARP 6.*
13. If evacuation is necessary, manage according to the Evacuation TARP 11 and Duty Card 11.2.

Duty Card 2.3 Passenger Operator

Passenger Train Stopped/Parted/Disabled Overdue In Tunnel

Italicised text applies for diesel or steam services, where required

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1. Liaise with the Train Manager
2. Communicate with passengers, always ensuring their safety
3. Administer first aid, if necessary
4. If evacuation is necessary, assist as directed
5. Assist with the distribution of onboard emergency supplies when directed
6. If the Train Manager or LE requires assistance outside of the train, *take a gas monitor (if available)*, portable radio, torch, and *wear appropriate RPE*
7. If evacuation is necessary, manage according to Evacuation TARP 11 and Duty Card 11.3.

Duty Card 2.4 On Board Service Manager

Passenger Train Stopped/Parted/Disabled/Overdue in Tunnel

1. Liaise with the Train Manager and obtain an update on the current situation. If the LE is incapacitated, arrange for the Train Manager to secure the train
2. Depending on the situation, consider the following:
   a. securing the train
   b. splitting the train
   c. shutting down the generator.
3. Communicate with other Onboard Personnel to:
   a. ensure the safety of passengers and Onboard Personnel are accounted
   b. identify any elderly, disabled or injured people
   c. administer first aid, if necessary
   d. seek assistance from medically trained passengers
   e. consider asking able passengers to assist those less able.
4. Advise passengers of the situation and instruct them to remain in their seats until advised further and use neutral, non-emotive words (e.g., situation or interruption)
5. Continue to monitor tunnel gas levels in different parts of the train, regularly rechecking:
   a. before the first alarm – the passengers remain on board – await rescue
   b. first alarm - investigate the possible cause and rectify, if safe
   c. second alarm - move passengers to the least affected part of the train
   d. Communicate with LE to check for an external source of the fire. If a fire is confirmed, proceed to TARP 6. If no fire evacuation is still necessary, proceed to TARP 11.

Duty Card 2.5 Train Controller

Train Stopped/Overdue in Tunnel (level 2)

Use when:

- a Tunnel Timer alarm is activated in Train Control, or
- other advice received of
  - derailment,
  - obstruction,
  - collision,
  - mechanical failure or
  - other event causing an unplanned stop in the tunnel and the train is unable to continue.

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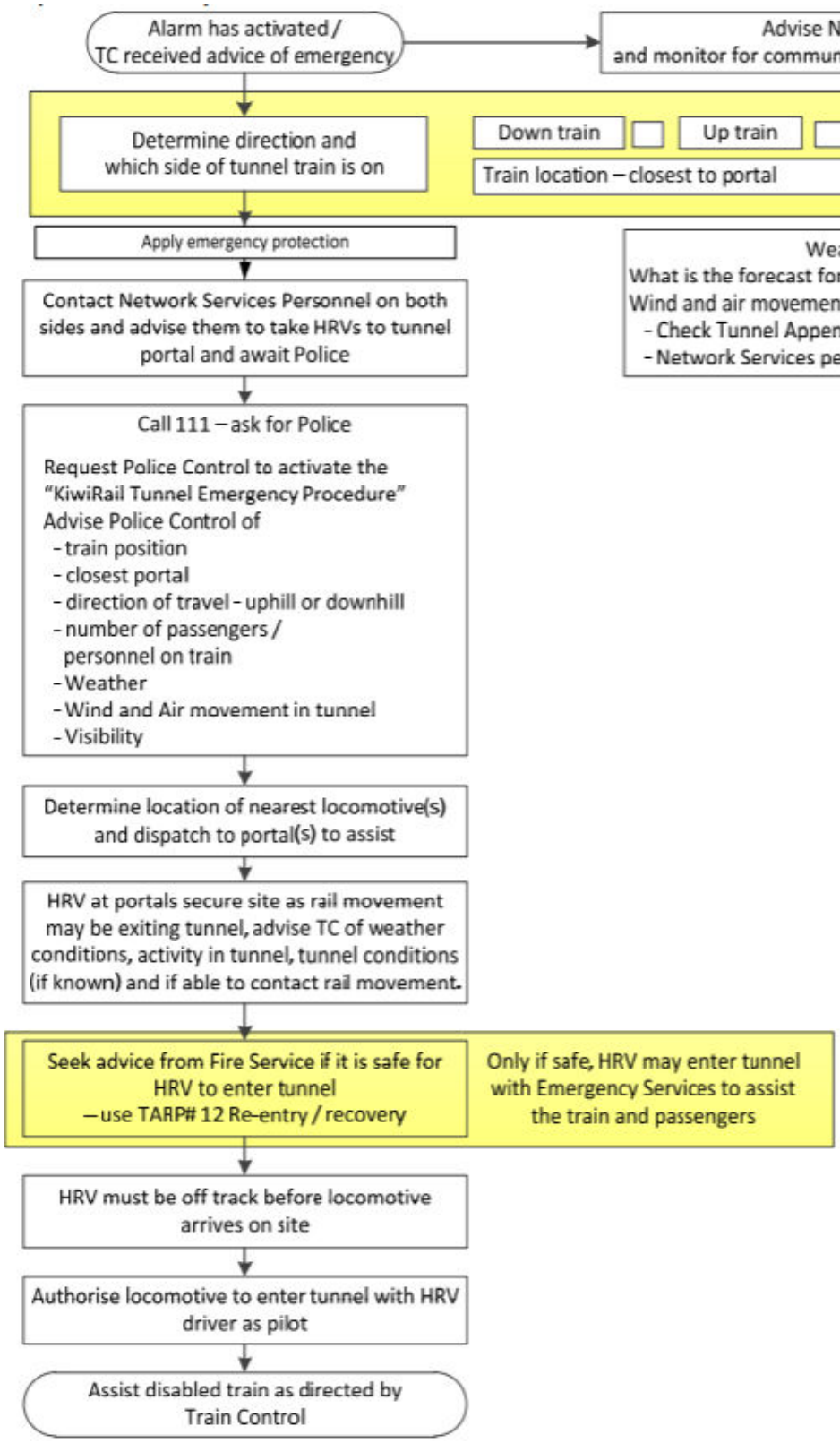

Duty Card 2.6 Train Manager

Passenger Train Stopped/Disabled/Overdue in Tunnel

1. Establish contact with the LE and:
   a. determine the reason for the stoppage

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   b. determine the estimated time of recovery
   c. confirm tunnel air movement.
2. Communicate with the On board Service Manager
3. Follow the On board Service Manager's directions. If required, assist with splitting and securing the train and exiting the tunnel, and confirm park brake application requirements
4. If required to exit the train, wear appropriate RPE and take a gas monitor, torch, and portable radio. If required for RPE, additional gas canisters
5. Communicate with the On board Service Manager at agreed intervals, and:
   a. continue to monitor tunnel gas levels
   b. first alarm - investigate possible cause and extinguish source, if safe to do so
   c. second alarm - communicate with LE to check for external sources of fire
   d. put on the escape set and attempt to re-board the train.
6. If a fire is confirmed, proceed to TARP 6. If there is no fire, evacuation is still necessary, proceed to TARP 11 and Duty Card 11.4

Duty Card 2.7 Network Control Manager

Train Stopped/Overdue in Tunnel (level 2)

Use when:

- a Tunnel Timer alarm is activated in Train Control, or
- other advice received of:
  - derailment,
  - obstruction,
  - collision,
  - mechanical failure or
  - other event causing an unplanned stop in tunnel.

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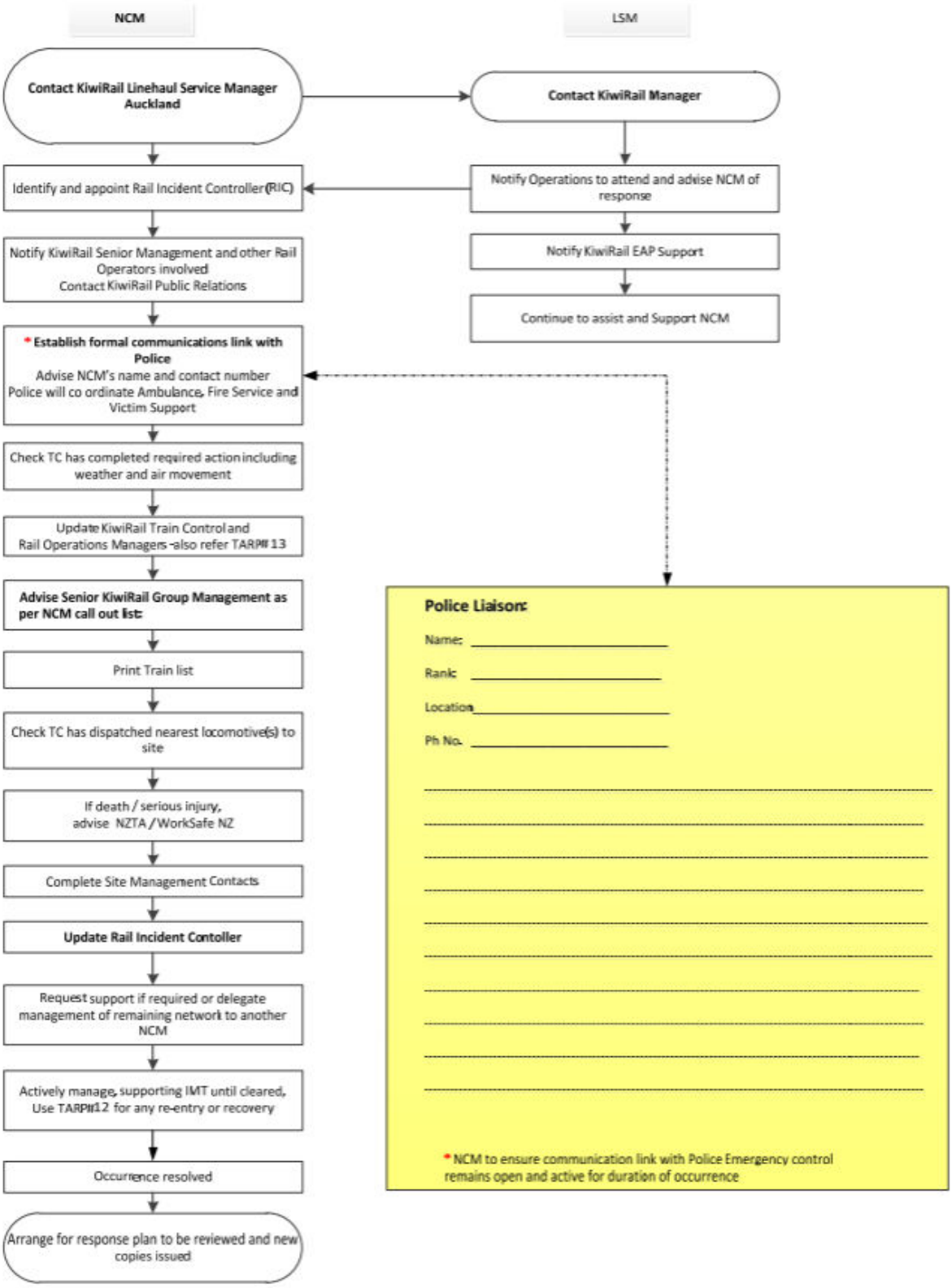

Duty Card 2.8 Train Attendant

Passenger Train Stopped/Parted/Disabled/Overdue in Tunnel

Follow instructions from the On Board Service Manager and:

1. Liaise with the On Board Service Manager

2. Communicate with passengers, always ensuring their safety
3. Administer first aid, if necessary
4. If evacuation is necessary, assist as directed
5. Assist with the distribution of onboard emergency supplies when directed
6. If evacuation is necessary, manage according to Evacuation TARP 11 and Duty Card 11.5.

Duty Card 2.9 Infrastructure Emergency Response

Train Stopped/Parted/Disabled/Overdue in Tunnel

Use when:

- a Tunnel Timer alarm is activated in Train Control, or
- other advice is received of:
  - derailment,
  - obstruction,
  - collision,
  - mechanical failure, or
  - other event causing an unplanned stop in tunnel.

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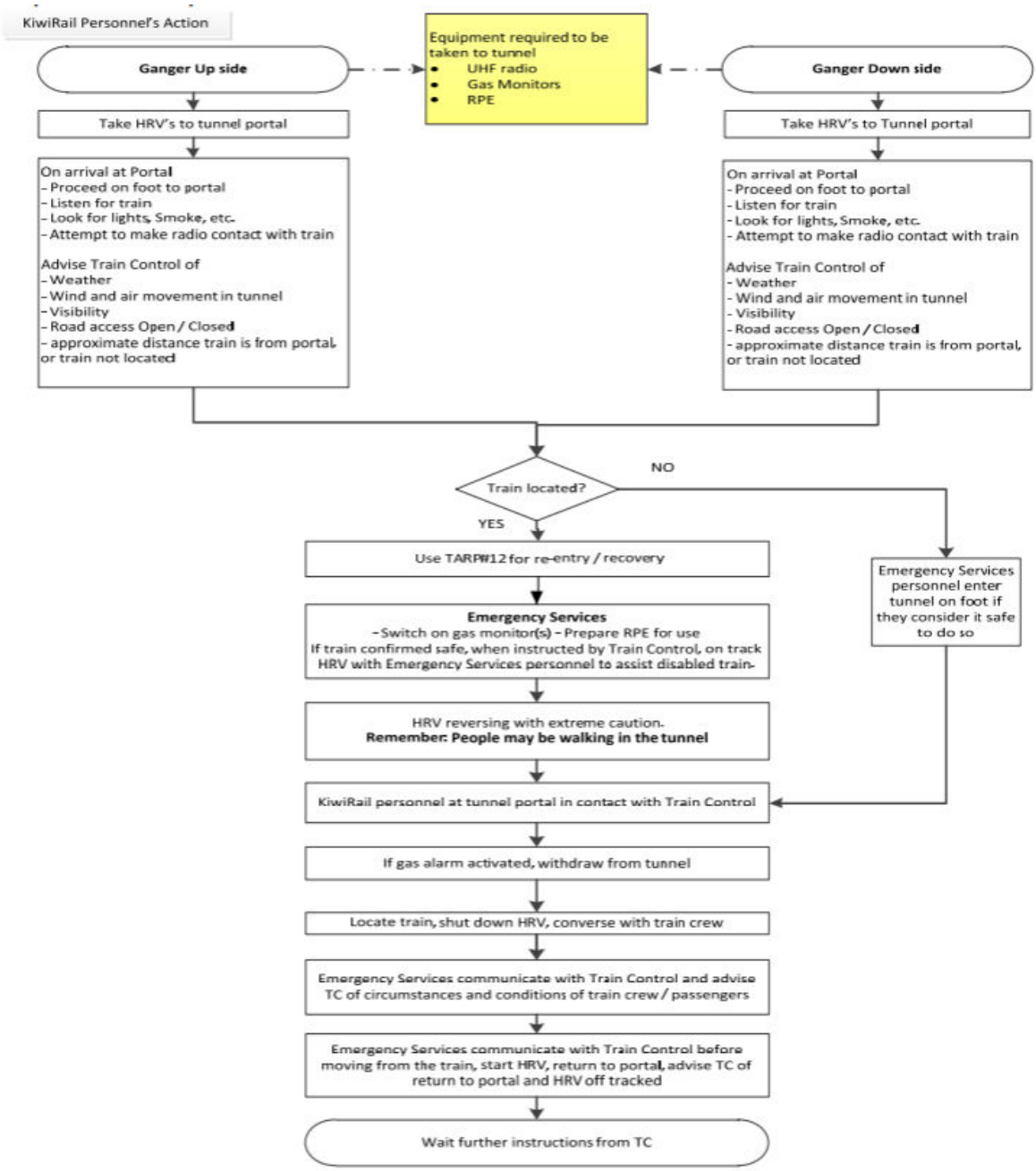
KiwiRail Personnel's Action
Ganger Up side
Equipment required to be taken to tunnel
UHF radio
Gas Monitors
RPE
Ganger Down side
Take HRV's to tunnel portal
Take HRV's to Tunnel portal
On arrival at Portal
- Proceed on foot to portal
- Listen for train
- Look for lights, Smoke, etc.
- Attempt to make radio contact with train
Advise Train Control of
- Weather
- Wind and air movement in tunnel
- Visibility
- Road access Open / Closed
- approximate distance train is from portal, or train not located
Train located?
NO
YES
Use TARP#12 for re-entry / recovery
Emergency Services personnel enter tunnel on foot if they consider it safe to do so
Emergency Services
- Switch on gas monitor(s) - Prepare RPE for use
If train confirmed safe, when instructed by Train Control, on track HRV with Emergency Services personnel to assist disabled train.
HRV reversing with extreme caution.
Remember: People may be walking in the tunnel
KiwiRail personnel at tunnel portal in contact with Train Control
If gas alarm activated, withdraw from tunnel
Locate train, shut down HRV, converse with train crew
Emergency Services communicate with Train Control and advise TC of circumstances and conditions of train crew / passengers
Emergency Services communicate with Train Control before moving from the train, start HRV, return to portal, advise TC of return to portal and HRV off tracked
Wait further instructions from TC

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3. TARP 3 Freight Train Stopped/Disabled/Parted/Overdue In Tunnel

Use when:

- a Tunnel Timer alarm is activated in Train Control
- derailment
- collision
- obstruction
- parting
- mechanical failure, or
- other event causing an unplanned stop in the tunnel.

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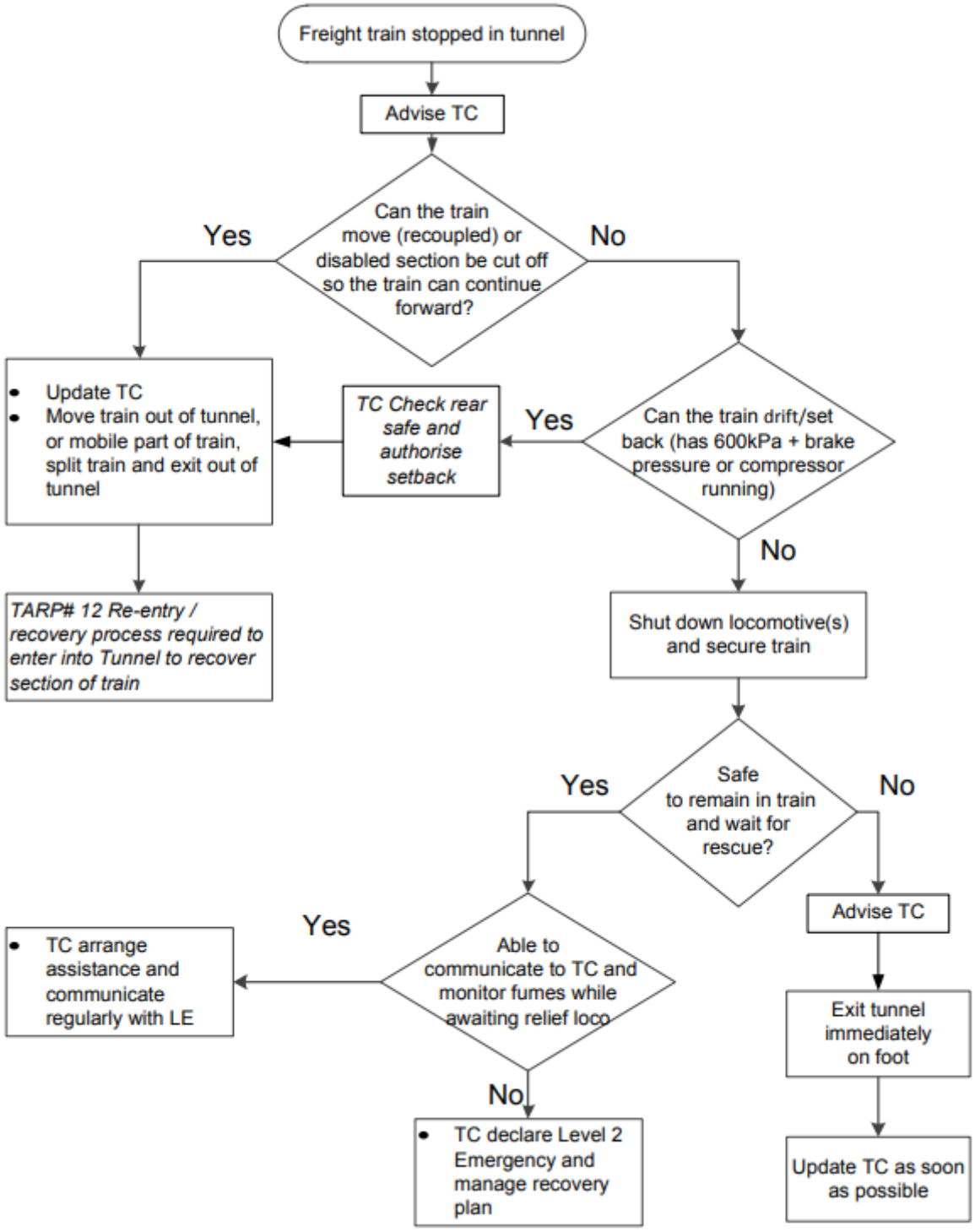

Duty Card 3.1 Locomotive Engineer

Freight Train Stopped/Parted/Disabled/Overdue in Tunnel

Italicised text applies for diesel or steam services, where required

1. Advise the Train Controller (if there is no initial response, use an emergency call)
2. Find the reason for the stop and rectify if safe
3. Consider hazardous vehicles on the train if shown on Train Work Order in case of a possible hazardous leak
4. Consider splitting the train and exiting the tunnel

5. *If the train can't be fixed or split, then shut down the diesel loco within 5 minutes of stopping*
6. Monitor tunnel gas levels. (see LE Gas TARPs)
7. If necessary, exit the cab, *wear appropriate RPE* and take: *a gas monitor*, torch, and portable radio - cross-banded on Channel 4*
8. Secure train to prevent movement
9. Advise the Train Controller to initiate a rescue
10. If safe, wait with the train for rescue, otherwise exit the tunnel on foot.

CAUTION
When exiting the locomotive in an emergency, be aware of the hazards, sharp edges, and wires above the locomotive and on the tunnel walls.

* Cross-banded on Channel 4 does not apply to Remote Control Operators

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4. TARP 4 HRV/MTMV Stopped/Disabled/Overdue in Tunnel

Use when:

- a Tunnel Timer alarm or Worker Overdue Alarm is activated in Train Control
- derailment
- collision
- obstruction
- mechanical failure, or
- other event causing an unplanned stop in the tunnel.

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Duty Card 4.1 Infrastructure

HRV/MTMV Stopped/Disabled/Overdue in Tunnel

Advise the Train Controller. If there is no initial response, make an emergency call.

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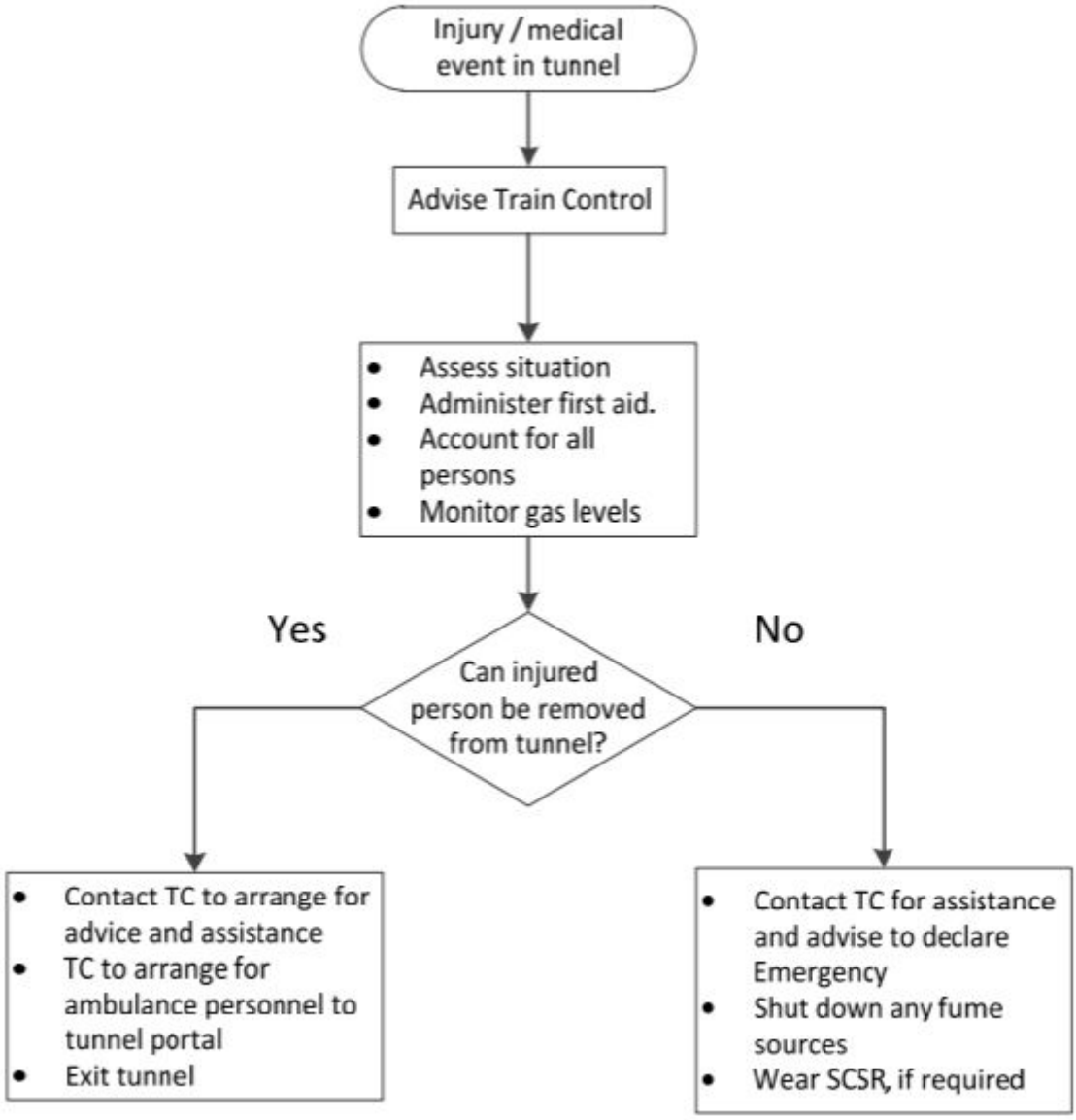
5. TARP 5 Injury/Medical Event in Tunnel Infrastructure Activities



Duty Card 5.1 Infrastructure

Injury/Medical Event in Tunnel

Advise the Train Controller as early as possible to allow Emergency Services to be on their way or on-site when you exit the tunnel. If there is no initial response, make an emergency call.

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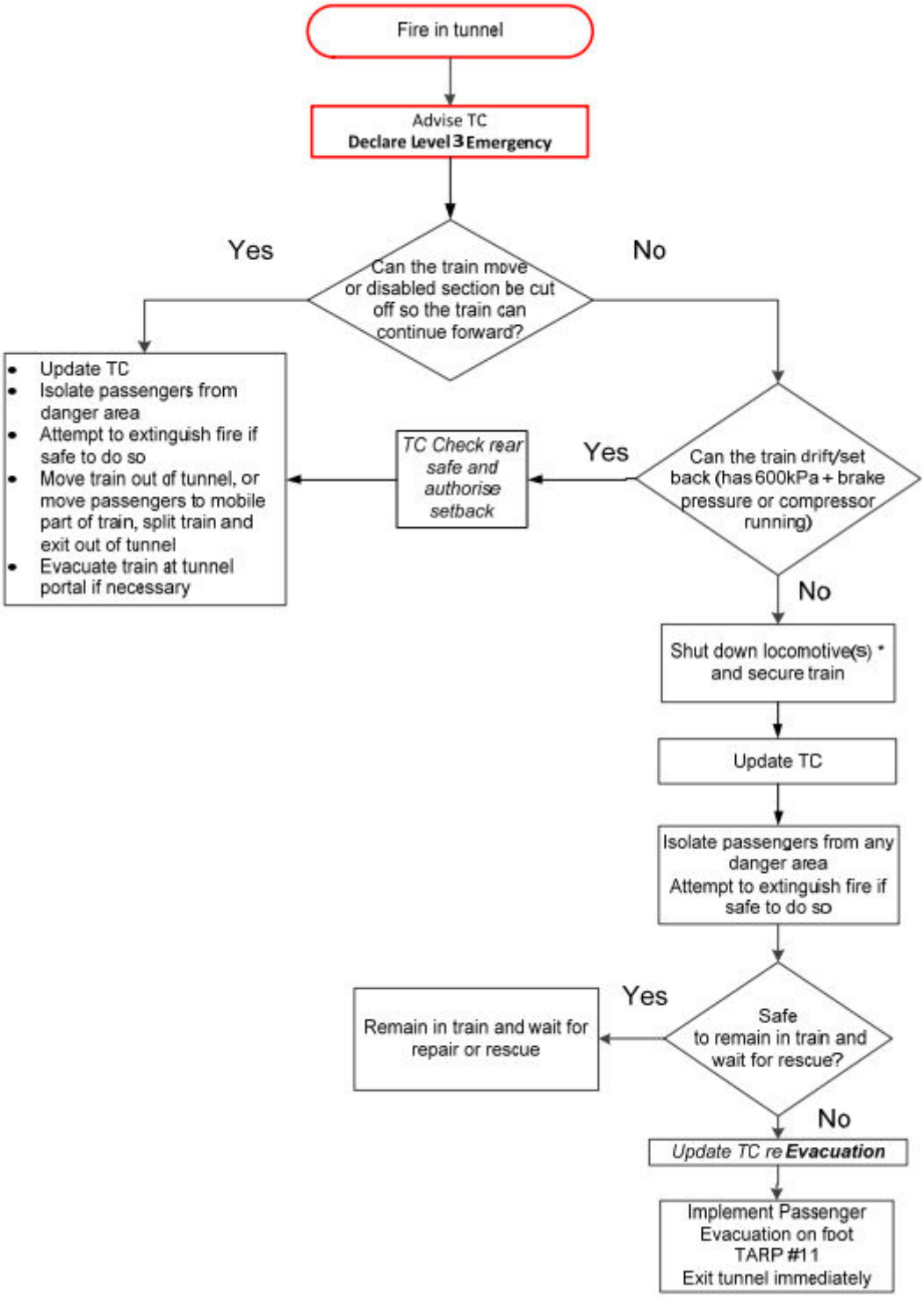
6. TARP 6 Fire in Tunnel Passenger Train



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IMPORTANT
After a fire has occurred in a tunnel, the tunnel must be inspected and the Infrastructure Manager must give clearance before any trains can enter the tunnel.

Duty Card 6.1 Locomotive Engineer

Fire in Tunnel - Passenger Train

Italicised text applies for diesel or steam services, where required

1. Keep the train moving if possible and exit the tunnel
2. Advise the Train Controller (if there is no initial response, make an emergency call)
3. Set back option, available if brake main reservoir pressure is over 600kPa
4. If the train is not mobile:
   a. consult with the Train Manager about splitting the train and exiting the tunnel
   b. *if unable to split, shut down the diesel loco within 5 minutes of stopping.*
5. If necessary, exit the cab, *wear appropriate RPE*, and take *a gas monitor,* torch, and portable radio - cross-banded on Channel 4*
6. Secure train with park brakes and/or hand brakes and chocks to prevent movement, if safe
7. Consider air movement in the tunnel and the direction of the smoke
8. Manage evacuation with the Train Manager and Train Crew
9. Update the Train Controller
10. If evacuation is necessary, manage according to Passenger Evacuation on Foot, TARP 11 and Duty Card 11.1.

CAUTION
When exiting the locomotive in an emergency, be aware of the hazards, sharp edges, and wires above the locomotive and on the tunnel walls.

* Cross-banded on Channel 4 does not apply to Remote Control Operators

Duty Card 6.2 Train Manager

Fire in Tunnel – Passenger Train

Italicised text applies for diesel or steam services, where required

1. Ensure the safety of all passengers and personnel and are accounted for
2. Keep the train moving if possible, and exit the tunnel
3. If the train is not mobile:
   a. discuss with the LE about splitting the train and exiting the tunnel
   b. if unable to split, shut down generator within 5 minutes of
   c. stopping, if safe to do so
   d. if the LE is incapacitated, secure the train to prevent movement.
4. If exiting the train, take a gas monitor, portable radio, torch *and wear appropriate RPE*
5. Proceed to the location of the fire and if safe, use the nearest extinguisher to put out the fire.
6. Monitor tunnel gas levels (see Duty Card 2.2)

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7. Consider air movement in the tunnel and the direction of the smoke
8. Liaise with the LE and Passenger Operators
9. Communicate with passengers and move passengers away from the danger area
10. Administer first aid, if required
11. If evacuation is necessary, manage according to Passenger Evacuation on foot, TARP 11 and Duty Card 11.2.

Duty Card 6.3 Passenger Operator

Fire in Tunnel – Passenger Train

Italicised text applies for diesel or steam services, where required

1. Proceed to the location of the fire and if safe, use the nearest extinguisher to put out the fire.
2. Liaise with the Train Manager
3. Communicate with passengers and move passengers away from the danger area
4. Administer first aid, if required
5. Assist with evacuation as directed
6. If the Train Manager or LE requires assistance outside of the train, take a gas monitor (if available), portable radio, torch, *and wear appropriate RPE*
7. If evacuation is necessary, manage according to Passenger Evacuation on Foot, TARP 11 and Duty Card 11.3.

Duty Card 6.4 On Board Service Managers

Fire in Tunnel – Passenger Train

1. Establish the location of the alarm via the Train Management System
2. Advise the Train Manager of the situation
3. Keep the train moving, if possible and exit the tunnel
4. Advise On Board Personnel of the situation:
   a. proceed to the location of the fire and if safe, use the nearest extinguisher to put out the fire.
   b. if possible, evacuate to another carriage before using the fire extinguisher
5. If the train is not mobile:
   a. consult with Train Manager about splitting the train or separating the carriage from the train and exiting the tunnel to secure vehicles; (Train Manager to assist if required)
   b. if there is a lack of air movement and unable to split, consider shutting down the generator.
6. Monitor tunnel gas levels (see **Duty Card 2.3**)
7. Consider air movement in the tunnel and the direction of the smoke
8. Liaise with the Train Crew and communicate with passengers
9. If the fire is not extinguished, move passengers away from the danger area (evacuate the carriage to another carriage)
10. Administer first aid, if required
11. If evacuation is necessary, manage according to Passenger Evacuation on Foot, TARP 11 and Duty Card 11.3
12. Ensure the safety of passengers and ensure they are accounted
13. Advise Portal Controller that you have checked the train and supply Emergency Services a list of persons (names and locations) unable to be moved from the train.

Duty Card 6.5 Train Manager

Fire in Tunnel – Passenger Train

1. Establish contact with the Locomotive Engineer (LE) and advise the situation
2. Keep the train moving if possible, and exit the tunnel
3. Liaise with the Onboard Service Manager (OSM)

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4. If the train is not mobile, consult with the LE
5. Advise the OSM, who will advise the action required:
   a. splitting train, or
   b. separating carriage from the train and exiting the tunnel, or
   c. if evacuation is necessary.
6. If the LE requires assistance outside of the train, wear appropriate RPE
7. Follow the OSM directions (OSM will advise which portal that passengers are to be directed to)
8. Accompany the OSM and the last passengers from the train
9. If evacuation is necessary, manage according to Passenger Evacuation on foot, TARP 11 and Duty Card 11.4.

Duty Card 6.6 Train Attendant

Fire in Tunnel – Passenger Train

1. Follow instructions from OSM
2. Proceed to the carriage in question
3. Use the nearest extinguisher to put out the fire
4. If possible, evacuate to another carriage before using the fire extinguisher
5. Fire extinguishers are located at each end of the AK carriages, at the end and behind the café counter in the AKC carriage
6. If evacuation is necessary, manage according to Passenger Evacuation on Foot, TARP 11 and Duty Card 11.5.

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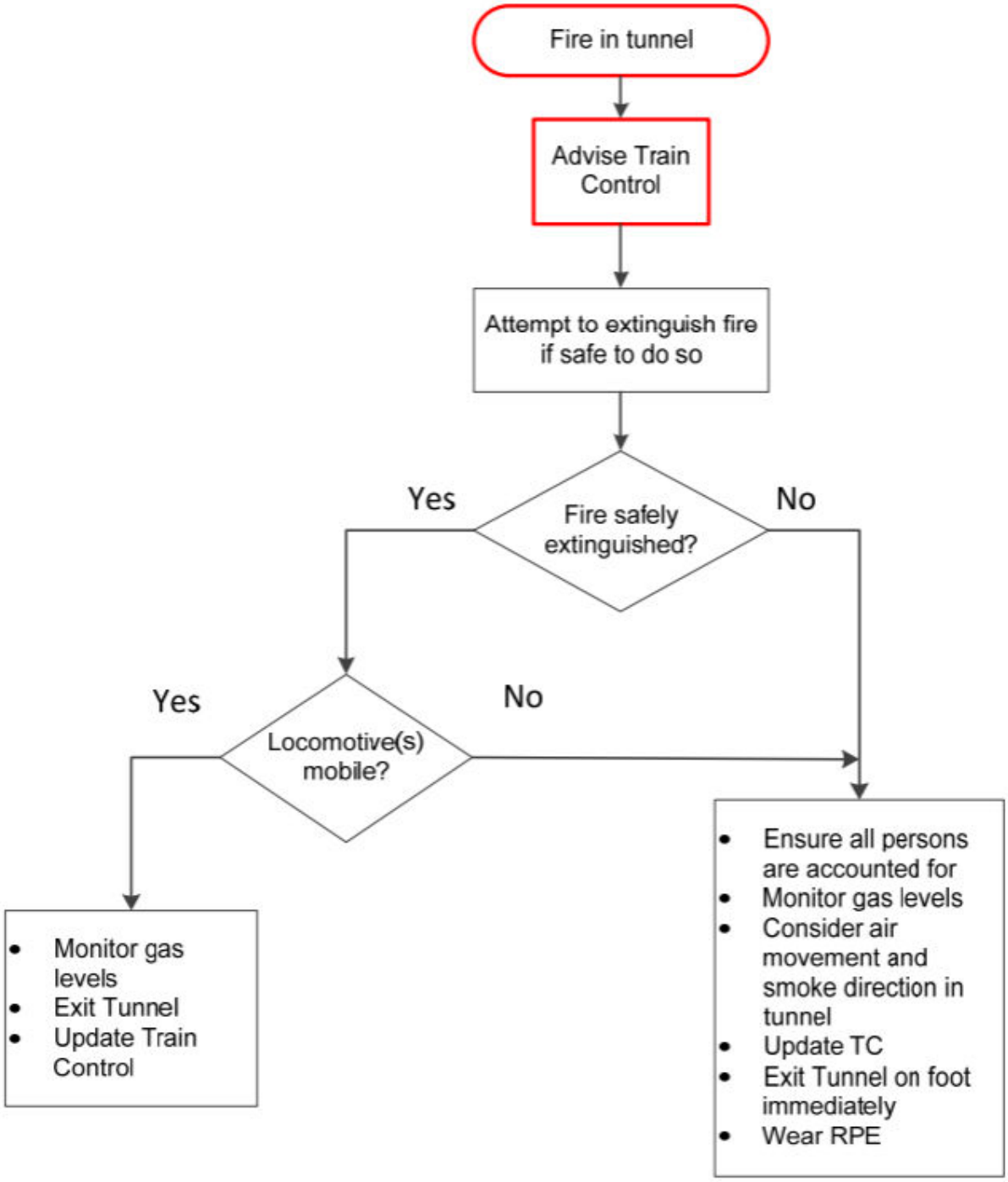
7. TARP 7 Fire in Tunnel - Freight Train



IMPORTANT

After a fire has occurred in a tunnel, the tunnel must be inspected, and the Infrastructure Manager gives clearance before any trains can enter the tunnel.

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Duty Card 7.1 Locomotive Engineer

Fire in Tunnel – Freight Train

Italicised text applies for diesel or steam services, where required

1. Keep the train moving if possible, and exit the tunnel
2. Advise the Train Controller (if there is no initial response, use an emergency call)
3. Extinguish inside-cab fire, if safe
4. If necessary, exit the cab, *wear appropriate RPE*, and take *a gas monitor*, torch, and portable radio – cross-banded on Channel 4*
5. Monitor tunnel gas levels (see LE Gas TARPs)
6. If the train is not mobile:
   a. secure train to prevent movement, if safe
   b. cut off the loco and exit tunnel.
   c. *If unable to cut off loco, shut down diesel loco and exit tunnel on foot*
   d. Consider air movement in the tunnel and the direction of the smoke
7. Update the Train Controller.

CAUTION

When exiting the locomotive in an emergency, be aware of the hazards, sharp edges, and wires above the locomotive and on the tunnel walls.

* Cross-banded on Channel 4 does not apply to Remote Control Operators

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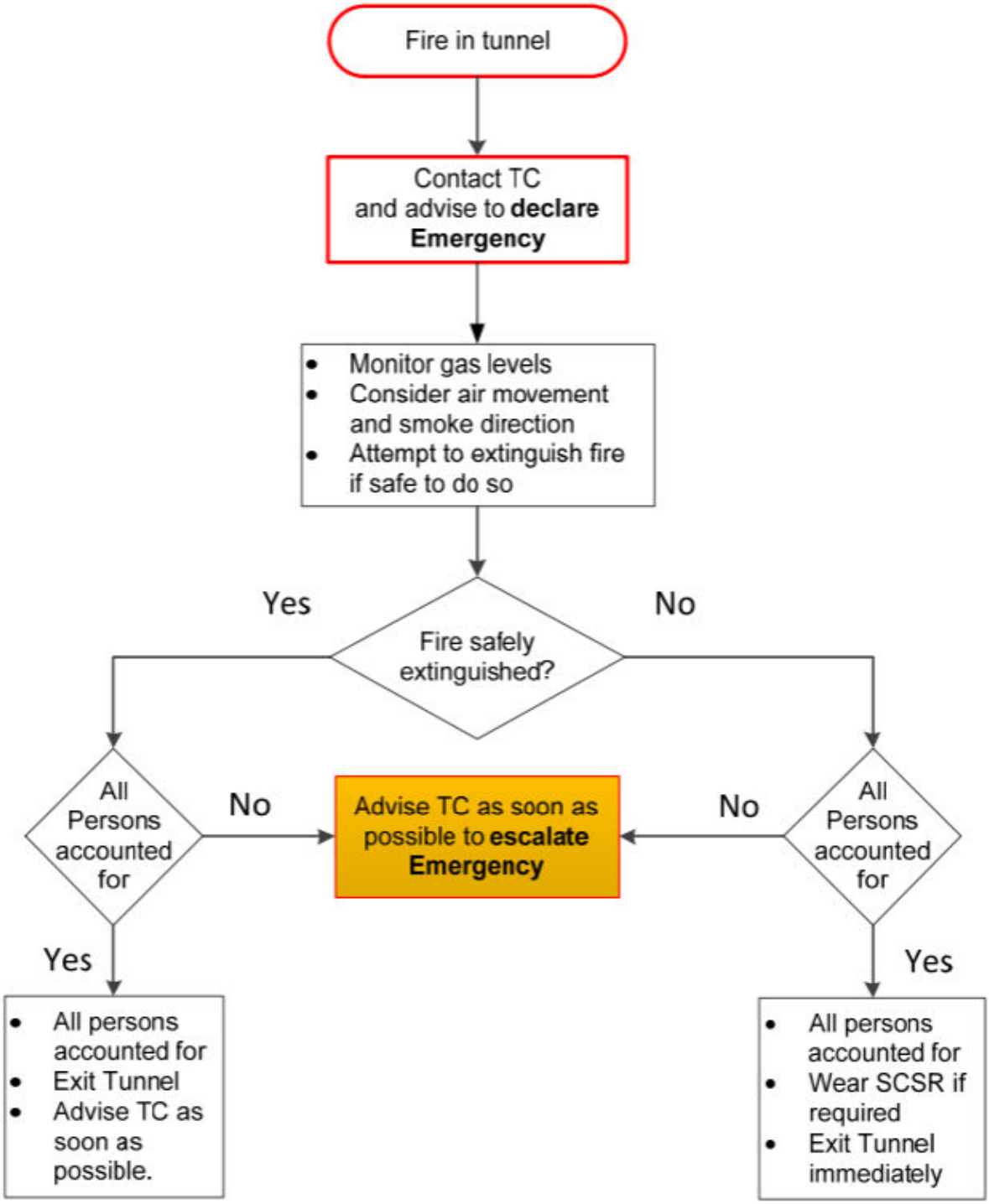
8. TARP 8 Fire in Tunnel Material or Work Site

Use when:

- a rail vehicle enters a tunnel and discovers a fire caused by trespassers, etc.



© KiwiRail

IMPORTANT
All work is suspended until clearance to recommence is given by the Infrastructure Manager.

Duty Card 8.1 Fire in Tunnel Material or Work Site

Fire in Tunnel – Material or Work Site

If exiting the tunnel:

1. Advise the Train Controller (if there is no initial response, use an emergency call) before putting SCSR on
2. Monitor:
   a. tunnel gas levels, and
   b. air movement in the tunnel and the direction of the smoke.
3. Update the Train Controller at the portal.

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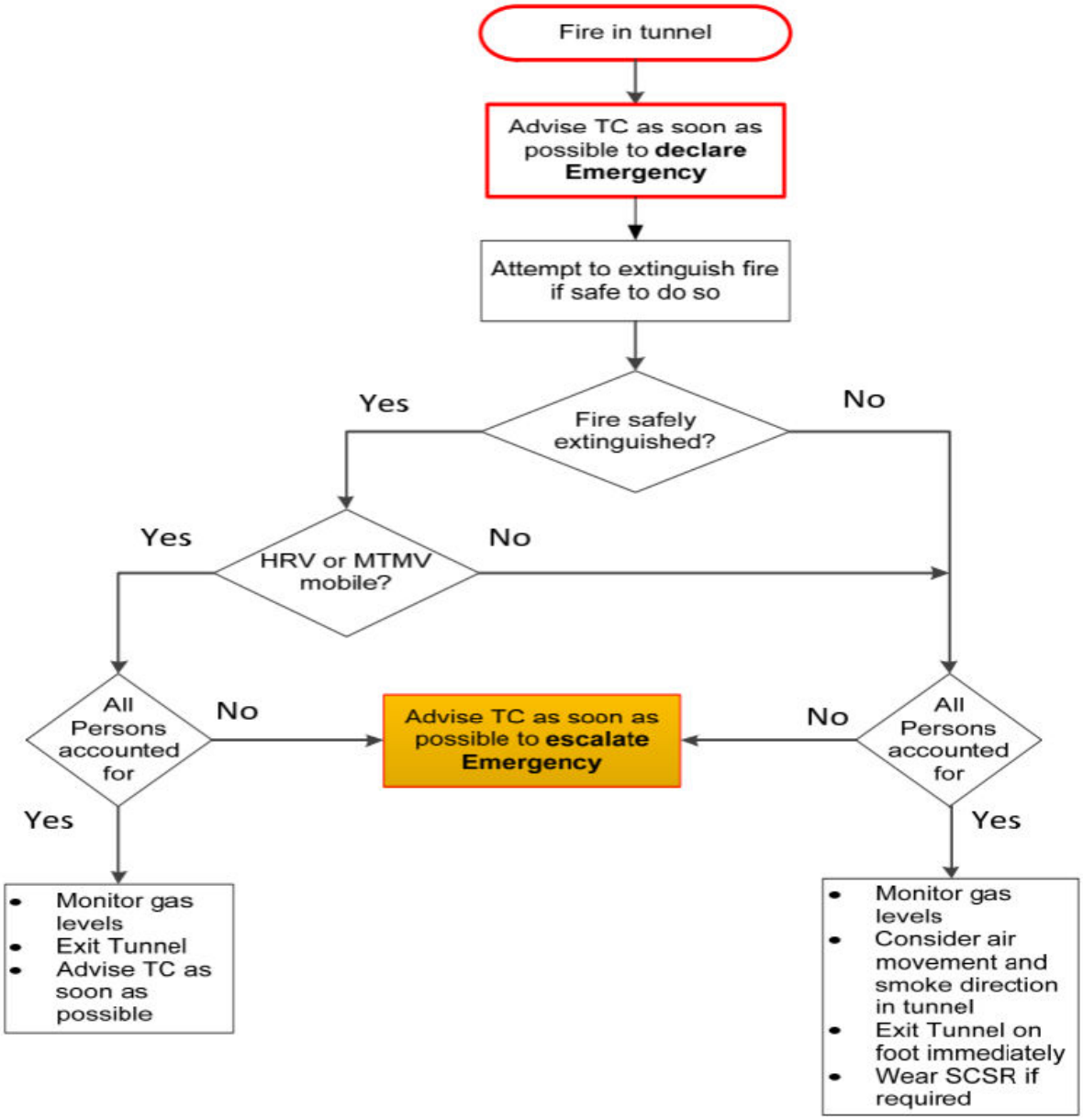
9. TARP 9 Fire in Tunnel Hi-Rail/MTMV/Maintenance Vehicles



IMPORTANT
All work is suspended until clearance to recommence is given by Infrastructure Manager.

Duty Card 9.1 Infrastructure

Fire in Tunnel - HRV/MTMV

© KiwiRail

1. Keep vehicles moving if possible and exit the tunnel
2. Advise the Train Controller (if there is no initial response, use an emergency call)
3. Use fire suppression systems on the vehicle
4. Use fire extinguishers located on the vehicle (if it is safe).
5. If exiting the tunnel:
    a. Advise Train Control before putting SCSR on
    b. Monitor:
        i. tunnel gas levels, and
        ii. air movement in the tunnel and the direction of the smoke.
6. Update the Train Controller at the portal.

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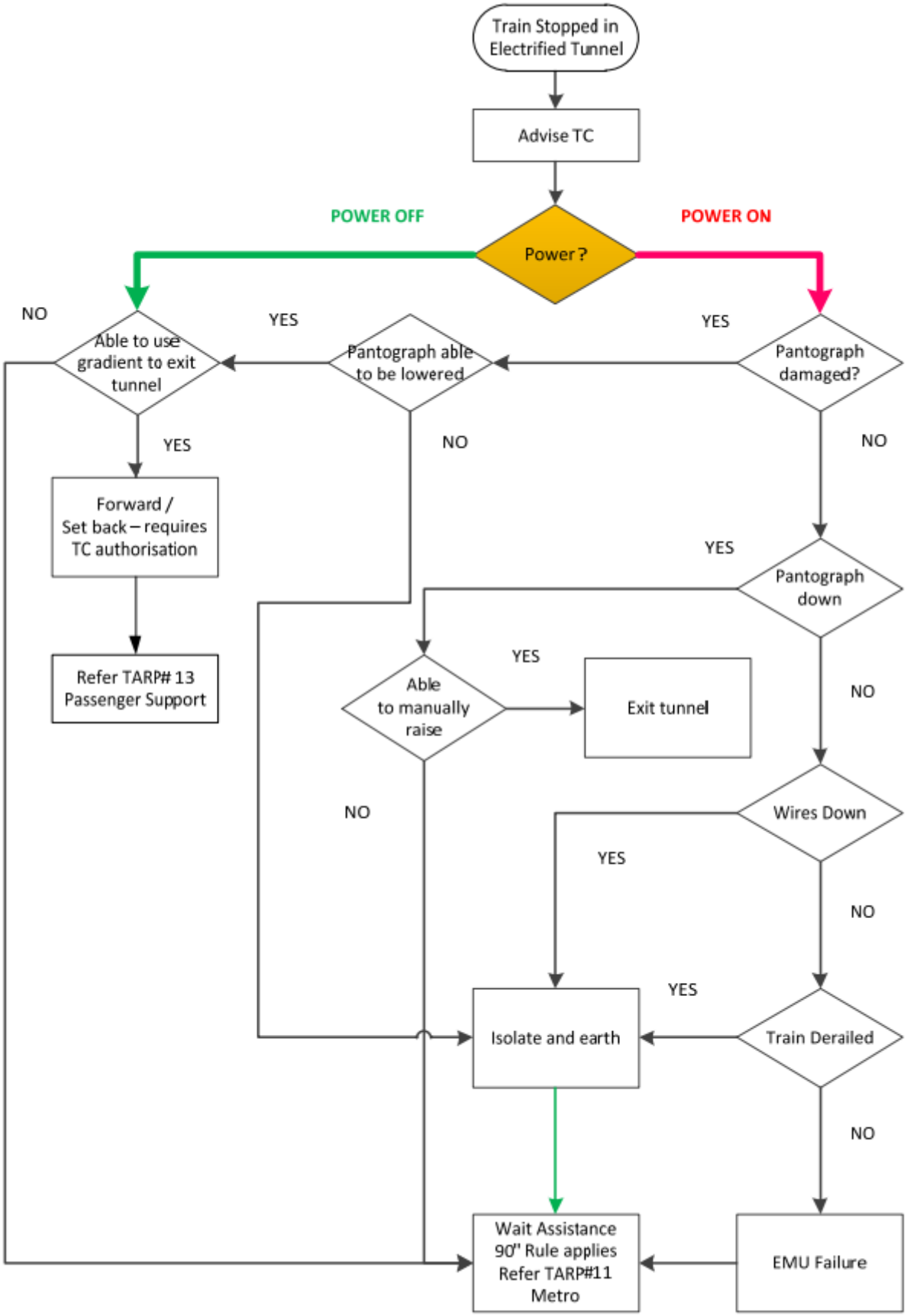
10. TARP 10 Overhead Power EMU Failure



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Duty Card 10.1 Failure of EMU in a Tunnel

If the air conditioning unit of an EMU fails due to a local defect or overhead power outage, only 90 minutes of air ventilation is available on battery power.

The Train Crew, Train Controller, and the Passenger Operating Company – Operations need to be aware of the possible need to evacuate an EMU service within 90 minutes to prevent passenger exhaustion.

Timed-Based Decision Process

Any response should be driven by a basic timeline of 90 minutes. The considerations and actions within each 30-minute segment are as follows:

0 – 30 Minutes – Situation Assessment

- The Operator contacts the Train Controller
- The Train Controller sets radio timer for 30 minutes
- The Train Controller determines:
  - the cause of power failure
  - what services are affected
  - likely recovery actions.

A significant safety factor will be whether the overhead is down.

30-Minute Decision Point

- Does the Train Controller believe that the disabled train can be recovered to a safe point for evacuation or power restored within 60 minutes (from the time power was lost)
- The Train Controller resets the radio timer for 30 minutes
- If Yes – monitor the situation
- If No – planning should commence for eventual evacuation.

30 to 60 Minutes – Planning

- The Operator and/or Train Manager works with the Train Controller and the Passenger Operating Company – Operations to plan evacuation (safe route, safe point of assembly, alternative transport)
- The Train Manager keeps passengers informed using the PA system
- Monitor the situation – if it changes, plans can be amended.

60 to 90 Minutes – Action

- Manage safe evacuation
- The Train Controller resets the radio timer for 30 minutes.

Train Controller Responsibilities are:

- Identify trains affected and their location
- Determine the cause of the power outage
- Assess options and determine appropriate actions required
- Determine likely timings
- Communicate with Operator(s)
- Manage recovery actions
- Authorise evacuation (when and if safe Refer to TARP 11 Metro).

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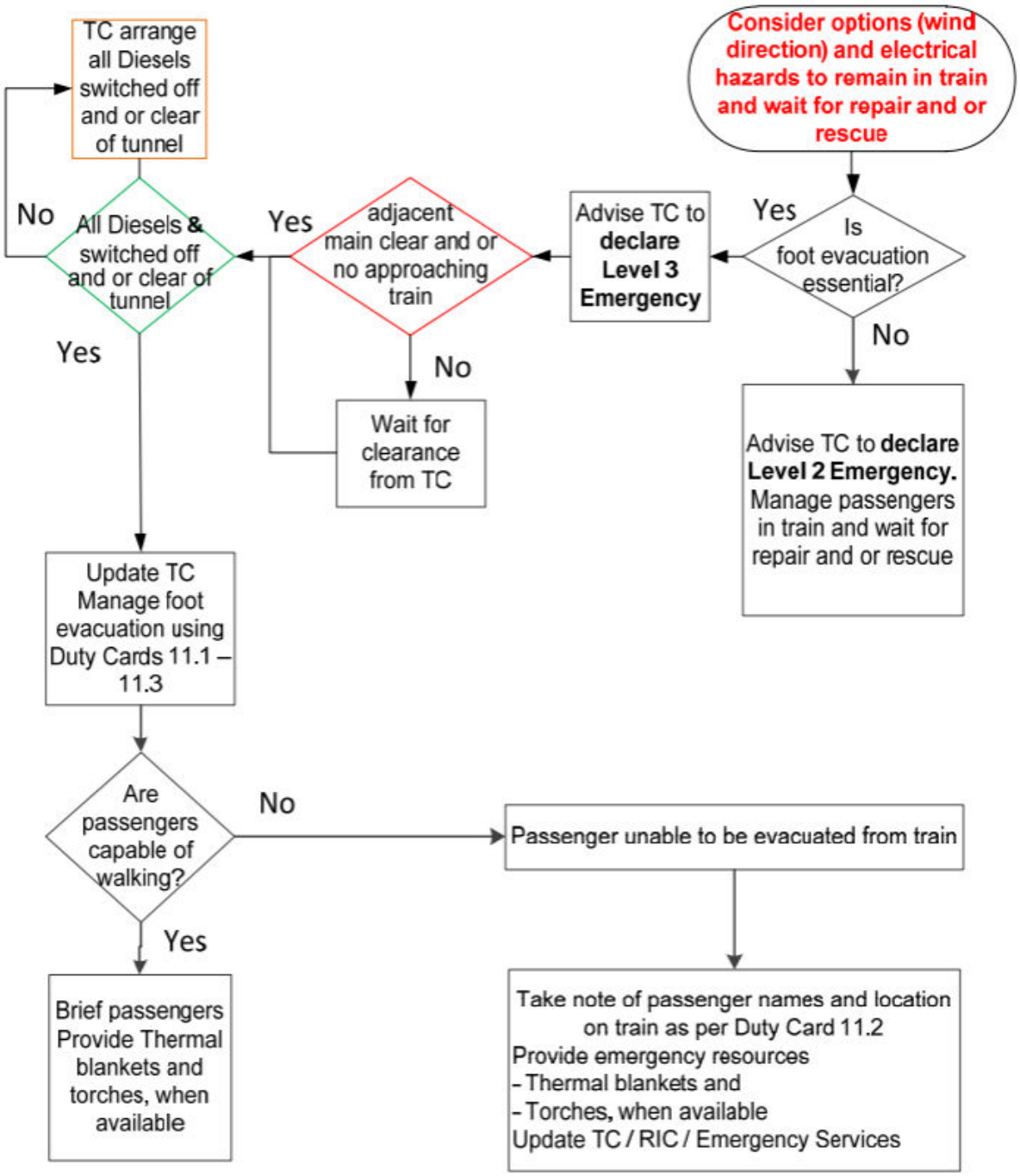
11. TARP 11 Multi Line Metro/Diesel and Steam Locomotives

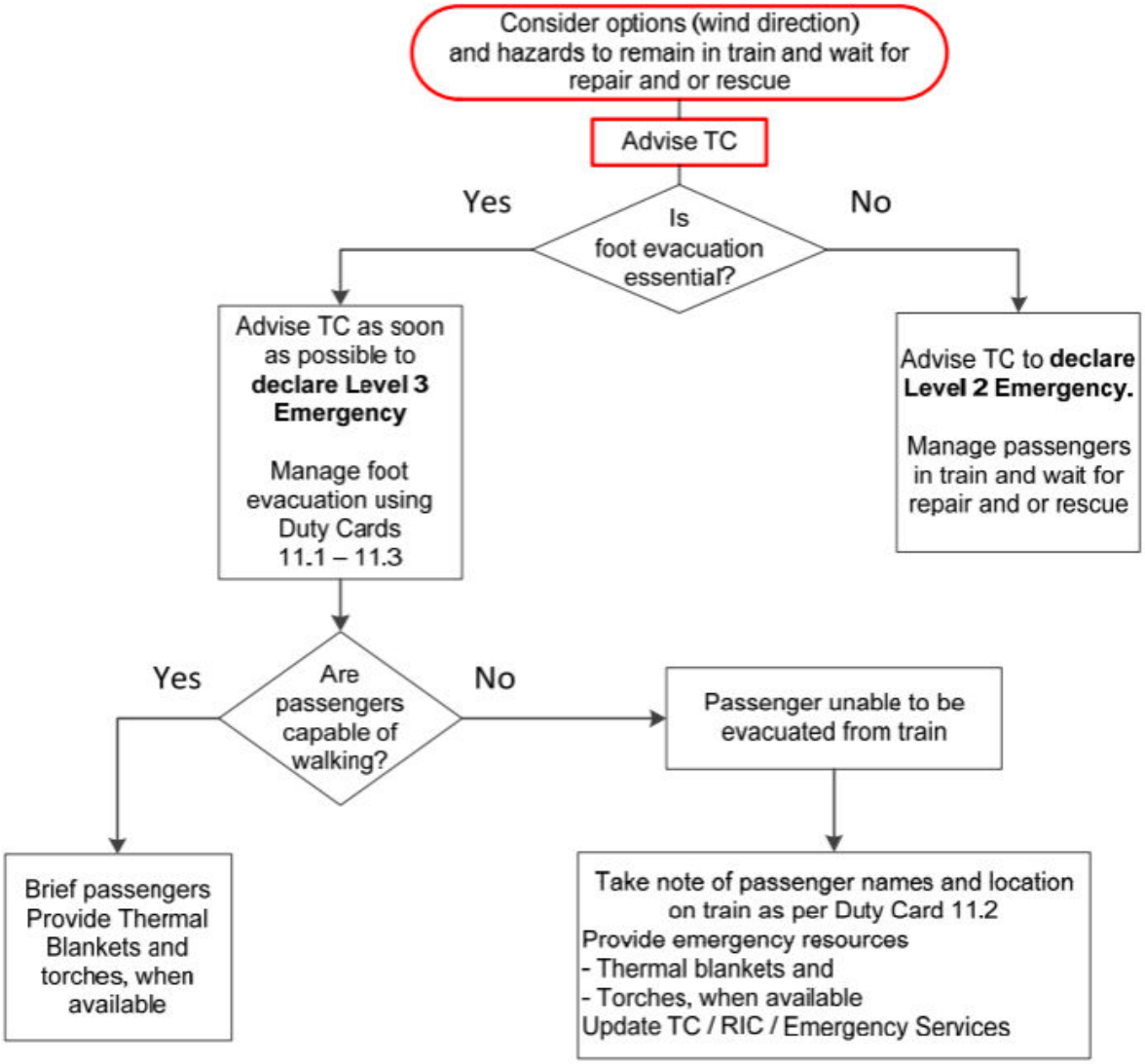
Multi-Line Metro – Passenger Evacuation On Foot



© KiwiRail

CAUTION
Evacuation should not occur unless necessary – the tunnel is normally cold and uneven underfoot conditions.

Diesel and Steam Locomotives - Passenger Evacuation on Foot



CAUTION
Evacuation should not occur unless necessary – the tunnel is normally cold and uneven underfoot conditions.

Duty Card 11.1 Locomotive Engineer

Passenger Evacuation on Foot

Italicised text applies for diesel or steam services, where required

1. Advise the Train Controller (if there is no initial response, use an emergency call)
2. *Shut down the diesel loco within 5 minutes of stopping*
3. Secure the train with park brakes and/or hand brakes and chocks to prevent movement
4. Consult with the Train Controller to obtain information (including wind direction and weather)
5. Consult with the Train Manager on the direction of evacuation:
   a. consider rail movements on adjacent mains (multi-line)
   b. consider possible following rail movements (Metro)
   c. consider air movement in the tunnel and the direction of the smoke.
6. Advise the Train Controller of the direction of travel
7. *Monitor tunnel gas levels (see Duty Card 2.1)*
8. *Wear appropriate RPE and* take: *a gas monitor*, torch, and portable radio - cross banded on Channel 4*
9. Manage evacuation with the Train Manager and Train Crew.

* Cross-banded on Channel 4 does not apply to Remote Control Operators

Duty Card 11.2 Train Manager

Passenger Evacuation on Foot

Italicised text applies for diesel or steam services, where required

1. Ensure the safety of passengers and Rail Personnel
2. Consult with the LE on the direction of evacuation:
   a. consider rail movements on adjacent mains (multi-line)
   b. consider possible following rail movements (Metro)
   c. consider air movement in the tunnel and the direction of the smoke.
3. If the LE is incapacitated, secure the train to prevent movement
4. *Shut down any diesel generators*
5. *Ensure the Passenger Operator that is leading passengers has a gas monitor*
6. Organise Passenger Operator to distribute emergency supplies
7. Communicate with other onboard personnel and passengers regarding the direction of travel
8. Decide where passengers will disembark and set up the detrainment ramp
9. Identify any unaccompanied children, elderly, disabled and injured persons to be triaged and ask able passengers to assist
10. Direct others to administer first aid, if required
11. Hand passengers torches and thermal blankets as they de-train (if available)
12. Instruct the Passenger Operator to follow Duty Card 11.3
13. Ensure a count of passengers and rail personnel is made and recorded as they disembark from the train
14. Complete a final check of the train to ensure all persons are accounted for before leaving:
   a. all driving cabs
   b. toilets and vans.
15. Record the number and location of passengers remaining on the train to be advised to Emergency Services
16. Take a *gas monitor*, portable radio, and torch *and wear appropriate RPE* when exiting the tunnel
17. Update the Train Controller with progress
18. Confirm all passenger and rail personnel are present to Portal Controller at the tunnel portal (supply list of remaining passengers).

Duty Card 11.3 Passenger Operator

Passenger Evacuation on Foot

Italicised text applies for diesel or steam services, where required

1. Liaise with the Train Manager
2. Communicate with passengers
3. Administer first aid, if required
4. If evacuation is necessary, assist as directed
5. Assist with the distribution of onboard emergency supplies when directed
6. Assist with disabled passengers
7. *Get a gas monitor from the Train Manager*
8. Lead passengers out of the tunnel, ensuring their safety, and:
   a. *Wear appropriate RPE, and* take a torch, first aid kit, and portable radio*, and gas monitor*
   b. place light sticks at right angles to track to mark obstructions.
9. *Monitor gas levels:*
   a. *be aware of any change in air movement in the tunnel (if possible, move upwind, towards clear air)*
   b. *if gas levels increase, ensure passengers return to the least affected part of the tunnel while you check to see if it is safe to proceed.*
10. Handover passengers to the Portal Controller (if present) at the portal
11. Take over the Portal Controller role if required. (Duty Card 14.7).

Duty Card 11.4 On Board Service Manager

Passenger Evacuation on Foot

1. If evacuation is required, consider the following:
   a. rail movements on adjacent lines (multi-line)
   b. possible following rail movements (Metro)
   c. air movement in the tunnel and the direction of the smoke
   d. fire and or electrical hazards in the tunnel.
2. Communicate the decision to evacuate with other On Board Personnel, and:
   a. confirm the train is secure, or
   b. apply park brakes if not already done.
3. Notify the Train Controller of the intention to evacuate
4. Notify all On Board Personnel and passengers:
   a. to follow directions of On Board Personnel
   b. in which direction to move, and
   c. which side of the tunnel is safest
5. Ensure Train Crew assist with evacuation
6. Identify disabled passengers and assist with their evacuation, if possible
7. Carry out a final check of carriages, toilets, viewing carriage and luggage van for any remaining persons
8. Record the number and location of persons remaining on the train to be advised to Emergency Services
9. Accompany the last passengers from the train and advise the Portal Controller that you have checked the train and if any persons unable to be moved from the train remain.

Duty Card 11.5 Train Manager

Passenger Evacuation on Foot

1. Follow Onboard Service Manager (OSM) directions:
   a. communicate the decision to evacuate to the LE
   b. The OSM will advise which portal that passengers are to be directed to.
2. Issue thermal blankets and torches to passengers

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3. Communicate with passengers
4. Administer first aid, if required
5. Assist with disabled passengers, if possible
6. Evacuate injured and disabled, if possible
7. Accompany the OSM and the last passengers from the train.

Duty Card 11.6 Train Attendant

Passenger Evacuation on Foot

1. Follow instructions from the Onboard Service Manager (OSM)
2. Take the waybill to check off passenger names
3. Lead passengers out of the tunnel, ensuring their safety, and:
   a. wear appropriate RPE and take a torch, first aid kit, portable radio, and gas monitor
   b. place light sticks parallel to the track at 10m intervals between the rails to mark the walking route.
4. Place light sticks at right angles to track to mark obstructions
5. Monitor gas levels:
   a. be aware of any change in air movement in the tunnel (if possible, move upwind, towards clear air)
   b. if gas levels increase, ensure passengers return to the least affected part of the tunnel while you check to see if it is safe to proceed.
6. handover passengers' waybill to the Portal Controller (if present) at the portal
7. take over the Portal Controller role, if required.

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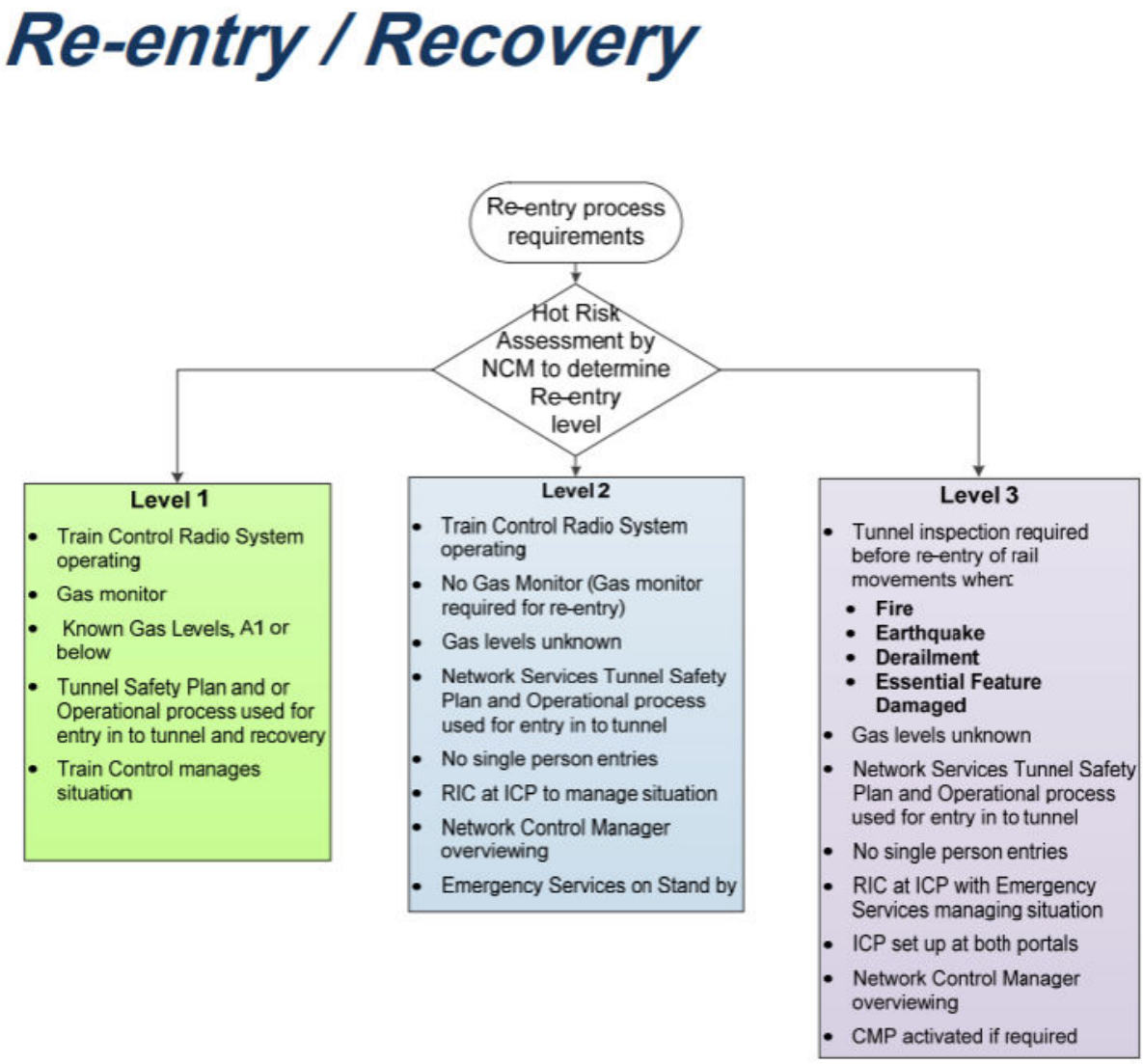
12. TARP 12 Re-entry/Recovery



12.1 Duty Card 12.1 Network Control Manager

Level 1 – KiwiRail on-site response

Rail Personnel respond using standard operating procedures.

Level 2 – Incident Management Team Response

KiwiRail incident management resources mobilised with Infrastructure in attendance and Emergency Services.

Level 3 – Crisis Management Plan Response

External assistance and Crisis Management Plan activated.

- Infrastructure Gas TARP describes the re-entry process for gas alarms only
- Rail Incident Controllers appointed by Network Control Manager, with support from Safety, Health and Wellbeing or Emergency Advisors

- Only Rail Personnel who are competent and trained in Tunnel Operations are to enter the tunnel for rail vehicle recovery and/or Infrastructure inspection purposes
- Level 3 – Additional risks will be managed by using the IMT using JSAs and action plans
- A communication plan is essential for entry into the tunnel
- The gradient of the tunnel must be factored into the re-entry process.

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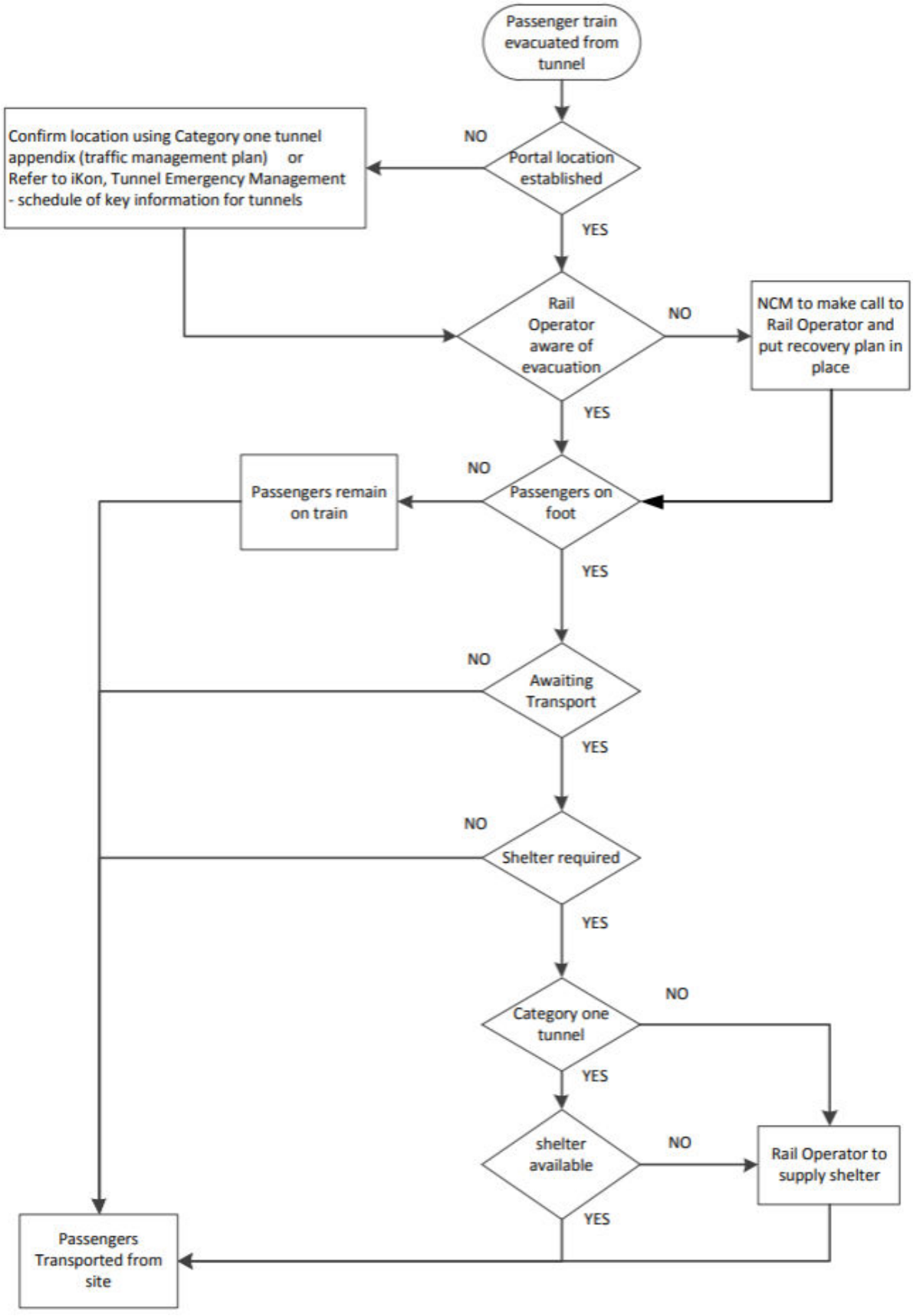
13. TARP 13 Passenger Support



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Duty Card 13.1 Network Control Manager

Once passengers are safe at the assembly locations, the Rail Operating Company is responsible for managing their welfare and arranging onward transportation.

Onward transport from the assembly locations will be determined by the RIC after considering the following options:

- relief locomotive to assist with moving carriages to the nearest station and/or thence to onward destinations
- relief passenger train to the nearest station and then to onward destinations
- relief train with freight wagons to the nearest station (must be risk assessed) and thence to onward destinations
- bus transfer to the nearest station or onward destinations
- helicopter transfer to a ground transport location and thence to onward destinations
- Rail Operating Companies may need to consider support from Defence Forces, if available.

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14. TARP 14 CIMS Model

Incident Controller and Management Team Roles

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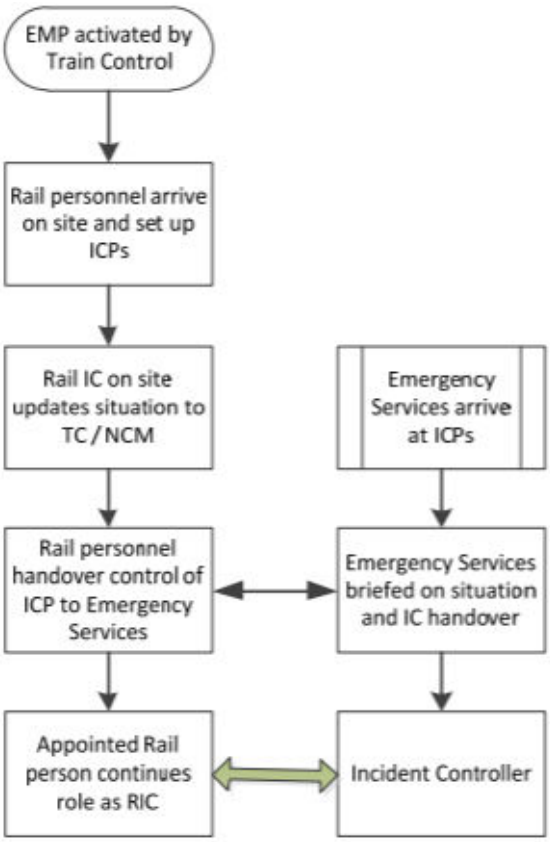
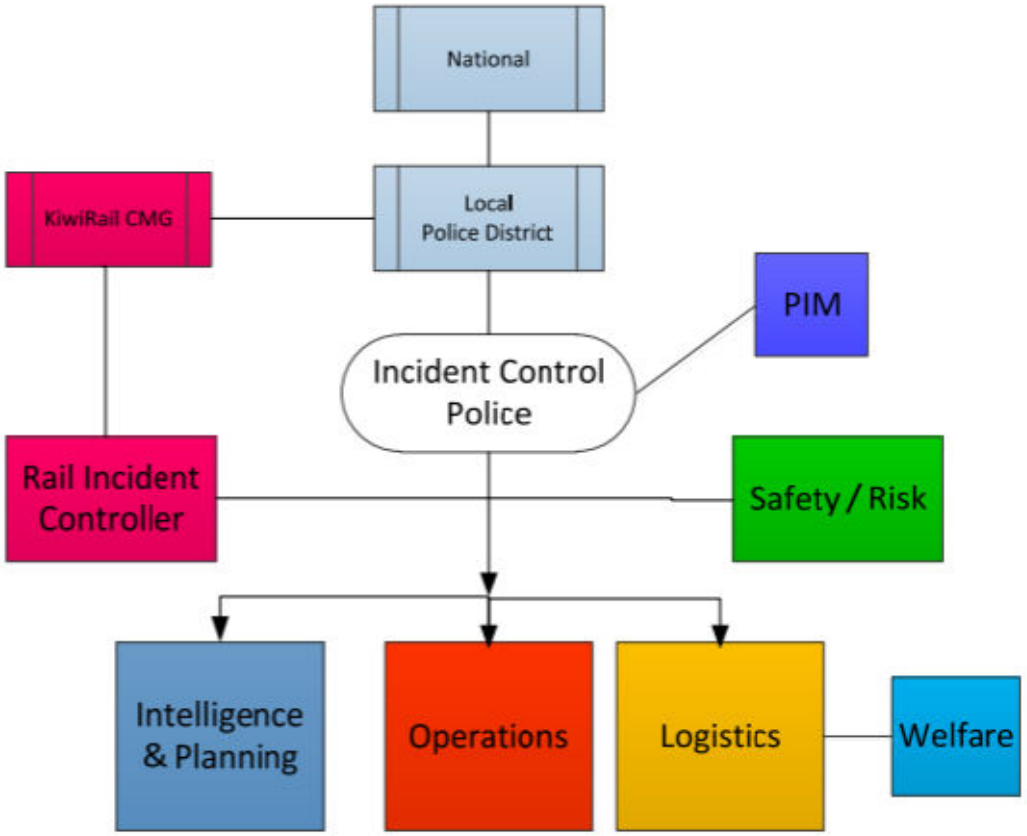

EMP activated by Train Control
Rail personnel arrive on site and set up ICPs
Rail IC on site updates situation to TC / NCM
Emergency Services arrive at ICPs
Rail personnel handover control of ICP to Emergency Services
Emergency Services briefed on situation and IC handover
Appointed Rail person continues role as RIC
Incident Controller


National
KiwiRail CMG
Local Police District
PIM
Incident Control Police
Rail Incident Controller
Safety / Risk
Intelligence & Planning
Operations
Logistics
Welfare

14.1 Duty Card 14.1 Rail Incident Controller (RIC)

KiwiRail Tunnel ICP activated

The most qualified Rail Personnel on site takes control until the appointed RIC (appointed by the Network Control Manager (NCM)) arrives.

RIC responsibilities:

1. report to the NCM
2. carry out the role of the Incident Controller (CIMS) until the arrival of the Emergency Services Incident Controller
3. handover to the Incident Controller
4. check external communication links are operational
5. brief and update the NCM on the status of the event
6. identify hazards and assess the risks:
    a. monitor air movement direction of smoke and gas levels in the tunnel
    b. brief the Incident Controller on rail hazards
    c. monitor and manage rail personnel fume exposures.
7. develop an Incident Rail Recovery Plan
8. communicate controls and actions
9. liaise with emergency services and the NCM, confirm the controlling authority on-site, and preserve evidence
10. mobilise resources as necessary, including:
    a. alternative transport for passengers, and
    b. welfare and support for passengers and Rail Personnel (food, drink, shelter, toilets).
11. contact the NCM for confirmation of arrangements for passenger transport after exiting the tunnel
12. confirm with the Incident Controller that all Rail Personnel are accounted.

Duty Card 14.2 Incident Controller (CIMS)

KiwiRail Tunnel ICP activated

The most qualified Rail Personnel on-site takes control until the Emergency Services Incident Controller arrives.

1. Appoint CIMS managers and other Incident Management Team (IMT) members roles, as required, using ICP folders (where supplied)
2. Ensure available labelled vests are utilised, and that all roles and communications are logged
3. Check external communication links operational
4. Brief the IMT on the status of the event
5. Identify hazards and assess the risks
6. Develop an Incident Action Plan and define objectives
7. Communicate controls and actions
8. Hold and chair regular IMT meetings and provide situation reports
9. Liaise with emergency services and the Rail Incident Controller, confirm the controlling authority on-site and preserve evidence
10. Direct emergency response onsite
11. Mobilise resources as necessary, including:
    a. alternative transport for passengers, and
    b. welfare and support for passengers and emergency response personnel (food, drink, shelter, toilets).
12. Consider setting up:
    a. safe forward points (SFP)
    b. assembly area (AA)

   c. staging area (SA).
13. ensure all Rail Personnel are accounted.

Duty Card 14.3 Operations (CIMS)

KiwiRail Tunnel ICP activated

1. Report to the Incident Controller
2. Obtain a briefing from the Incident Controller
3. Assist with developing, reviewing and implementing the Incident Action Plan
4. Assist with developing and reviewing all risk assessments
5. Request and utilise personnel, equipment, and other resources
6. Attend all IMT meetings
7. Maintain a log of all actions and communications.

Duty Card 14.4 - Logistics (CIMS)

KiwiRail Tunnel ICP activated

1. Report to the Incident Controller
2. Obtain a briefing from the Incident Controller
3. Provision to support the Incident Management Team (IMT):
   a. facilities
   b. relief personnel
   c. welfare (food, sanitation, accommodation).
4. Provision to support the Incident Action Plan:
   a. resources
   b. specialist equipment and personnel.
5. Consider the following:
   a. medical
   b. communications
   c. transport.
6. Attend all IMT meetings
7. Maintain a log of all actions and communications.

Duty Card 14.5 - Planning/Intelligence (CIMS)

KiwiRail Tunnel ICP Activated

1. Report to the Incident Controller
2. Obtain a briefing from the Incident Controller
3. Develop an Incident Action Plan (IAP)
4. Carry out risk assessment against the IAP
5. Identify key objectives and timelines
6. Consider developing multiple response strategies
7. Utilise any specialist advice (e.g., Urban Search and Rescue)
8. Request any specialist resources, such as:
   a. victim support (Police)
   b. local facilities (hotels, motels, halls)
   c. government agencies.
9. Attend all IMT meetings
10. Maintain a log of all actions and communications.

Duty Card 14.6 Administration (CIMS)

KiwiRail Tunnel ICP Activated

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1. Report to the Incident Controller
2. Obtain a briefing from the Incident Controller
3. Record all roles and responsibilities
4. Record all Incident Management Team meetings, including all decisions made, allocated tasking and timeframes
5. Maintain a communications log
6. Retain all Incident Action Plans
7. Retain all risk assessments
8. Retain all situation reports
9. Attend all IMT meetings.

Duty Card 14.7 Portal Controller (x2 – Both Portals)

Tunnel ICP Activated

1. Equipment check:
   a. hi-vis vest
   b. torch
   c. portable UHF radio
   d. road cones and barrier tape (if available)
   e. tally counter for counting passengers.
2. Proceed to the portal
3. Confirm radio contact with the Incident Controller and seek information on passenger numbers
4. Control entrance to the portal or Safe Forward Point
5. Advise RIC of air movement and the direction of smoke/fumes in the tunnel – supply regular updates
6. Record people emerging and exiting the tunnel portal and advise the Incident Controller
7. Hand over passengers exiting the portal to a Passenger Escort
8. Advise numbers to the Incident Controller and details of persons remaining on the train
9. Standby at the portal
10. Observe conditions at the portal (e.g., fumes, smoke) and advise the Incident Controller of any changes.

Duty Card 14.8 Passenger Escort (x2 – Both Portals)

Tunnel ICP Activated

1. Equipment check:
   a. hi-vis vest
   b. torch
   c. portable UHF radio
   d. notebook and pen
   e. first aid kit.
2. Report to the Portal Controller
3. Escort passengers to the assembly area and ensure they remain there until directed otherwise or alternative transport is provided
4. Provide Shelter, if required (see RIC)
5. Record passenger names and contact details
6. Escort passengers to the Triage Area for first aid and medical attention if necessary
7. Attend to the safety and welfare of the passengers.

Duty Card 14.9 Traffic Marshall (x2 – Both ICPs)

Tunnel ICP Activated

 © KiwiRail

1. Equipment check:
    a. hi-vis vest
    b. torch
    c. portable UHF radio
    d. road cones and barrier tape (if available).
2. Report to the Incident Controller
3. Direct authorised vehicles to allocated locations
4. Advise non-essential and unauthorised vehicles to leave the area
5. Update the Incident Controller.

14.10 Duty Card 14.10 Safety Officer

Tunnel ICP Activated

1. Equipment check:
    a. hi-vis vest
    b. torch
    c. portable UHF radio.
2. Report to the Incident Controller, identifying and responding to
    a. hazards, and report on safety during an emergency incident
    b. hazards to Rail Personnel
    c. health and welfare issues of personnel during an emergency incident
    d. actions required to be taken to deal with situations posing a risk of harm or injury
3. Update the Incident Controller on actions taken.

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15. Gas TARPs

15.1 Locomotive Engineer

Locomotive Engineer in Cab TARP			
Level or Response	**Level 1**	**Level 2**	**Level 3**
Triggers	1st alarm sounds 20ppm CO 1ppm NO_2 5ppm H_2S 19.5% O_2	2nd alarm sounds 50ppm CO 3ppm NO_2 10ppm H_2S 23.5% O_2	Alarm 2 rising Above 120ppm CO Above 5ppm NO_2 Above 15ppm H_2S Below 19% O_2
Actions	• Continue to monitor gas levels • Carry on moving through tunnel and determine time left in tunnel before exiting • Ensure windows closed • Get RPE ready (gas levels my raise quickly to an A2)	• Tell the Train Controller • Don mask and filter • Determine time left in tunnel before exiting • Carry on moving through tunnel • Ensure windows closed • Get SCSR ready	• Tell the Train Controller of rising levels • Remove mask and filter • Don SCSR • Continue to monitor gas levels • Carry on moving through tunnel • Ensure windows are closed **If exposed without RPE to:** • **Ceiling Value (for any amount of time), or** • **A2 Alarm for more than 15mins, then** **a medical assessment is required**

Locomotive Engineer out of Cab TARP			
Level or Response	**Level 1**	**Level 2**	**Level 3**
Triggers	**If you are required to go to ground in a tunnel you MUST don your RPE (mask & filter)**	19.5% O_2 or above Below 200ppm CO	Below 19% O_2 Above 200ppm CO

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Locomotive Engineer out of Cab TARP			
Actions	• Don mask and filter before leaving cab for on ground activities, ensure windows and doors are closed • Check gas detector regularly to monitor for increase in gases or decrease O_2 • **Remember that you are protected from the tunnel air environment while wearing your mask and filter**	• Check gas detector regularly to monitor for increase in gases or decrease in O_2	• Withdraw back to cab and ensure doors and windows closed • If the gas readings in the cab exceed Level 3 “In Cab TARP “gas levels for more than 1 minute, tell the Train Controller • Remove mask and filter • Don SCSR and evacuate tunnel remembering the 1st option is to get the train out of tunnel **If exposed without RPE to:** • **Ceiling Value (for any amount of time), or** • **an A2 Alarm for more than 15mins, then** **a medical assessment is required**

WARNING

Ceiling values:

CO - 200ppm

NO_2 - 5ppm

H_2S - 15ppm

15.2 Infrastructure

Infrastructure Personnel			
Level or Response	**Level 1 (TWA)**	**Level 2 (STEL)**	**Level 3 (Gas Levels Rising)**
Triggers	1st alarm sounds 20ppm CO 1ppm NO_2 5ppm H_2S 19.5% O_2	2nd alarm sounds 50ppm CO 3ppm NO_2 10ppm H_2S 23.5% O_2	2nd alarm still sounding Above 120ppm CO Above 5ppm NO_2 Above 15ppm H_2S Below 19% O_2

 © KiwiRail

Infrastructure Personnel			
Actions	• Sample gas monitor reading around emission source and rest of work site • Check airflow is in the same direction as at the start of shift • Tell the Work Supervisor • Attempt to lower gas level below TWA by shutting down and/or re-arranging plant. • If gas level can't be reduced below TWA within 15 minutes, withdraw to a predetermined safe assembly point / fresh air. **Re-entry:** • Remain in clean air for at least 15 minutes • The Work Supervisor and one other person re-enter the tunnel worksite to evaluate levels of gas. (Must have SCSR ready to put on for tunnels over 200 metres long) • If gas level is below TWA, then work can restart **Options if tunnel fan and/or door fitted:** • Reposition fans or adjust speed of fans • Check if the door is closed and the fan is working • Check the wind direction is not working against the fan. If it is, turn the fan off and open the curtain	• Shut down equipment if you can do so safely • Tell the Work Supervisor • Withdraw to a predetermined safe assembly point / fresh air. **Re-entry:** 1st STEL and 2nd STEL • Remain in clean air for at least 15 minutes. • Complete STAR / JSA • The Work Supervisor and one other person re-enter the work site to evaluate levels of gas. (Must have SCSR ready to put on). • If gas level is below TWA, then work can restart. 3rd STEL • No return to tunnel work for at least 12 hours	• Shut down equipment if you can do so safely • Tell the Work Supervisor • Withdraw to predetermined safe assembly point / fresh air. • If the gas readings have risen to the above levels for more than 1 minute during evacuation, don SCSR **Evacuation Process:** • If possible before donning SCSR, use radio, or as per communications plan, to call the Train Controller • State calmly: "Evacuate, Evacuate, Evacuate" • Evacuate the tunnel **Re-entry:** • No return to tunnel work for at least 12 hours **If exposed without RPE to:** • **Ceiling Value (for any amount of time), or** • **A2 Alarm for more than 15mins, then** **a medical assessment is required**

WARNING

Ceiling values:

CO - 200ppm

NO_2 - 5ppm

H_2S - 15ppm

15.3 DräegerX-am 5000 Quick Guide

Figure 1. DräegerX-am 5000 Quick Guide

Draeger X-am 5000 Quick Guide

KiwiRail

Dräger

Dräger X-am® 5000 - Quick User Guide

To turn instrument ON

Press the OK button for approx. 3 seconds. (Countdown 3, 2, 1)

To turn instrument OFF

Press and hold the + and OK buttons simultaneously for approx. 3 seconds. (Countdown 3, 2, 1)

To perform a fresh air calibration

Wait until the ! symbol disappears. (Takes about 4 minutes after instrument is turned on)

Press + 3 times

Icon will appear to the right of the screen

Press OK to start fresh air calibration. Sensor readings will flash indicating fresh air cal in progress

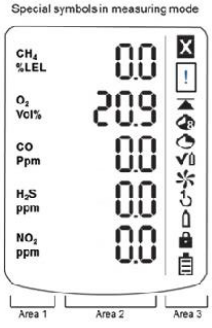
Press OK again when sensor readings are stable (OK will be displayed. Instrument will return to normal measuring mode after 1 minute, or press + to return immediately

Check Peak Levels

Press and hold OK for 2 seconds. Peak readings are displayed. Instrument will return to normal measuring mode after 3 seconds

Dräger

Special symbols in measuring mode



Area 1

Chemical symbols for the measured gases and Measuring unit.

Area 2

Value is above measuring range

209 Numerical gas concentration

Value is below measuring range

Measuring channel or instrument fault

Area 3

Instrument fault
Notice or warning
Fresh air cal
Peak hold
TWA 8 hours
STEL 15 mins
One button calibration
Calibrate each sensor
Password protected menus
Battery

In Display	Signal Tone & Red Alarm Lamp	Alarm Type	Acknowledge the Signal Tone
"A1" Alternating with gas concentration		Concentration – pre-alarm	Press OK
"A1 or A2" Alternating with gas concentration		Only for O2: Concentration – main alarm	Not possible
"A2" Alternating with gas concentration		Concentration – main alarm	Not possible
"STEL" Alternating with gas concentration		Exposure alarm STEL	Not possible
"TWA" Alternating with gas concentration		Exposure alarm TWA	Not possible
Battery Symbol		Battery pre-alarm	Press OK
Battery Symbol		Battery main alarm: Switches off automatically after about 2 minutes	Press OK
Error Symbol		Fault	Press OK