

**THE PERSONAL EMERGENCY RESPONSE SERVICES LIMITED
(PERSL)**

Industry Guideline PERSL 2023

Centrally Monitored Personal Response Systems

*This document is available for download free of charge
from Personal Emergency Response Services Limited (PERSL) at www.persl.com.au*



Edition: PERSL Industry Guidelines April 2023

Disclaimer

To the extent possible under Australian law, the Personal Emergency Response Services Limited (PERSL) including its officers, employees, agents and contractors, disclaims all responsibility for any direct or indirect loss, damage, claim or liability associated with the content of this Industry Guide, including where there has been negligence.

Section 1 Scope and General

1.1 Scope

A Personal Emergency Response System (PERS) is a communication system that facilitates the connection of a user requiring assistance, to a monitoring facility (CMF).

This Industry Guideline specifies the minimum performance, design and operation requirements for Personal Emergency Response Systems (PERS's) which communicate with a 24-hour monitoring facility over a communications link.

It also provides guidelines for the selection of such systems.

1.2 Objectives

The Personal Emergency Response Services Limited (PERSL) is the Australian peak body representing manufacturers, suppliers, monitoring facilities and consumers of 24/7 Monitored PERS and Personal Response Services.

The objectives of PERSL include:

- (a) promotion of the provision of a quality social support monitoring facility and the associated products designed to deliver the same for people and the carers of people who are aged and frail, who have a disability, or who are otherwise socially or personally vulnerable
- (b) development, promotion and maintenance of good practice guidelines and standards for social support monitoring facilities, both for technical service delivery and for consumer outcomes including products
- (c) ensuring that members of the company who provide social support monitoring facilities comply with good practices and focus on consumer outcomes
- (d) doing all such other things as may be incidental to the attainment of such objectives.

The development of this Guideline assists PERSL in achieving these objectives.

1.3 Copyright

Copyright belongs to the Personal Emergency Response Services Limited (PERSL) 2023. This Industry Guide is copyright and must not be used, transmitted or reproduced in any way, unless as specified below:

- (a) you are permitted to copy, transmit or reproduce this document for compliance, educational or non-commercial purposes
- (e) if you copy, transmit, or reproduce this document it must be in its entirety and must include this copyright notice
- (f) you must not change or alter the document in any way

- (g) if you wish to copy, transmit or reproduce this document for commercial purposes you must first obtain written permission of the Personal Emergency Response Services Limited (PERSL).

1.4 Definitions

For the purposes of this Industry Guideline, the following definitions apply. Where possible, these definitions have been made the same as those in AS4607:1999.

1.4.2 access technology

The type of carriage technology available to the user.

1.4.3 activated condition / activation period/ alarm session

The condition that exists from the time the alarm is manually or automatically triggered until the local equipment returns to the *idle state*.

1.4.5 activity monitor

An alarm-triggering device that operates automatically when a routine activity being monitored is modified or ceases within a specified period. An *inactivity monitor* oversees an activity of a person or equipment. When, after a pre-determined period, an activity has not taken place an *alarm signal* is triggered.

1.4.6 alarm signal

A signal transmitted to the CMF to indicate that an alarm condition exists, including but not limited to:

- (a) a trigger device
- (b) environmental or physiological monitoring device
- (c) power failure, or
- (d) activity monitor.

1.4.7 alarm service provider

A general term for any business, department or individual that provides personal response services for users.

1.4.8 care facility

Typically, a residential aged care organization where the user resides. A care facility may also be the *client*.

1.4.9 call lockout

A method of preventing subsequent emergency calls being registered at the CMF within a predetermined period.

1.4.10 cancel/ cancel button

The mechanism by which the alarm is cancelled.

1.4.11 client

The person, agency or company that pays for the service. The client may also be the user.

1.4.12 data collection device

A device that collects and stores data for analysis and/or transmission.

1.4.14 environmental monitor

A device that collects and stores environmental data for analysis and/or transmission, such as over/under temperature, gas level, smoke, fire or similar.

1.4.15 fault condition

The condition that occurs when the *local equipment* or monitoring facility recognizes that a part of the system is faulty.

1.4.16 fault indication

A signal that indicates a *fault condition* to the user.

1.4.17 gateway device

A gateway is a hardware device that acts as a "gate" between two networks. It may be a router, firewall, server, or another device that enables traffic to flow in and out of the *long-range communications link*

1.4.18 handshaking

A process whereby transmitted information is acknowledged by the receiver.

1.4.19 idle state

An equipment state where all parts of the local equipment are operational and ready to respond to an emergency activation.

1.4.20 integral antenna

An antenna that is housed inside a piece of equipment and with no external connection. Typically, a pc board copper track acting as an antenna.

1.4.21 inactivity monitor (see also activity monitor)

An inactivity monitor oversees an activity of a person or equipment and a report is sent or an alarm is triggered after a pre-determined period if that activity has not taken place.

1.4.22 installer

The installer is a person who takes responsibility for the installation and testing of alarm local equipment.

1.4.23 Level 1 First Aid Certificate

A qualification obtained through a recognized training authority, e.g. Red Cross, St John Ambulance, or similar.

1.4.24 local equipment

Equipment located with the user or within the user's residence. Local equipment may include, trigger devices, a local unit, environmental or physiological sensors, and other associated equipment that make up the PERS.

1.4.25 local unit

A local unit is a piece of local equipment that acts as a bridge between local triggers and sensors and the monitoring facility.

A Local unit receives an alarm or other information from trigger devices, sensors, or data collection devices, and processes and transmits the information to the CMF. It shall also provide audible and/or visual indications to the user and shall have a loud-speaking function allowing voice communications with the CMF operator.

1.4.26 long-range communications link

The transmission medium between the local equipment and the monitoring facility.

1.4.27 may

Indicates the existence of an option.

1.4.28 CMF Operator

An CMF operator is a member of the CMF whose role is to action a response and implement a follow up procedure on behalf of the user.

1.4.29 mode-3 connection

A telephone line connection configuration that allows local units using PSTN to take priority over all other devices on the same telephone line.

1.4.30 central monitoring facility (CMF)

A facility or network of facilities that receives alarm and/or supervisory signals from Personal Emergency Response Systems (PERS) and a user information system for the receipt and processing of alarm or supervisory signals received in order to provide a response.

1.4.31 nominated contact

A person or entity nominated by the user or the *user's representative* to be called by the monitoring facility.

1.4.32 non-volatile

A design feature that ensures the system retains essential information when powered down or reset.

1.4.33 open space

The situation where the signal path between the transmitter and receiver is not affected by obstructions or reflections.

1.4.34 passive trigger/passive pendant

Passive triggers are triggers that only activate in response to a user pressing a button. They typically communicate with a local unit over a short-range communications link

1.4.35 physiological monitor

A sensor intended to collect physiological information from the user. Typical physiological monitors include pulse monitors, blood pressure monitors, blood sugar monitors, etc.

1.4.36 power supply

The source that delivers the necessary electrical power to the system.

1.4.37 pre-alarm

A condition initiated by the receipt of a triggering signal. The pre-alarm period is maintained for a pre-determined time period during which visible and audible indication may be given to the user that this condition exists. The user can cancel the pre-alarm condition within this time in order to avoid transmission of the alarm signal to the CMF.

1.4.38 pre-alarm signal

An audible and visual signal to the user that indicates the local unit is in the pre-alarm condition.

1.4.39 primary battery

A battery that does not need charging and which cannot normally be recharged.

1.4.40 reassurance signal

An audible and or visual indication to the user that the alarm is in the process of being communicated to the CMF. The reassurance signal shall also indicate that an alarm has been received by the CMF.

1.4.41 redundancy

Where more functional units or services are provided in the system than are strictly needed to handle the planned workload. The units or services are arranged such that each is easily substituted for any other, to achieve seamless operation if the primary function fails.

1.4.42 response time

The time taken between a call being received and acknowledged by the CMF system, and an CMF Operator responding to that call.

1.4.43 secondary battery

A battery that is capable of being recharged.

1.4.44 shall

Indicates that an item is mandatory to comply with this Industry Guideline.

1.4.45 short-range communication link

Transmission medium between items of local equipment.

1.4.46 should

Indicates an item is recommended, but not mandatory, to comply with this Industry Guideline.

1.4.47 smart pendant/smart trigger

An emergency pendant which provides functions in addition to a basic emergency call button. A smart pendant may include active functions such as position reporting, periodic test signals, fall detection, and environmental and physiological monitoring.

1.4.48 stored program computer

A computer, micro-computer, or microprocessor, that stores program instructions in electronically or optically accessible memory.

1.4.49 supervisory signal

A signal transmitted to the CMF to report the operational status of local equipment including, but not limited to:

- (a) low battery signal
- (b) faulty battery signal
- (c) periodic check-in signal, ping signal, or auto-test signal.

A supervisory signal is one that does not require an immediate response

1.4.51 telecoms service provider

The provider of long-range telecommunications services.

1.4.51 test signal

An automatically initiated signal that verifies the correct function of parts of the system.

1.4.52 trigger device

Any local equipment device that is used to initiate an alarm.

1.4.53 triggering signal

A signal received from an associated trigger device.

1.4.54 user

A person who has a personal emergency response system for their safety and wellbeing.

1.4.55 user's representative

A person who is authorized to act on the behalf of the user.

15. Review Period

In order to accommodate technological developments, and mitigate electronic security threats, this Guideline shall be reviewed at least every 24 months.

Section 2 Responsibilities Beyond Control

Although monitored PERS systems have proven to be very reliable, and all reasonable endeavours shall be made by alarm service providers to identify and rectify potential issues, all PERS rely on technologies, systems, and services which are not within the control of the PERS supplier or the monitoring facility.

External systems and services such as telecommunications and Global Positioning Satellite (GPS) systems are not within the control of the PERS supplier or the monitoring service.

Wireless devices may be subject to interference, signal blocking or failure to operate and may not function consistently or continuously due to environmental variations.

The battery life of smart trigger devices will vary depending on the type and age of the battery, the type of usage, and the local environmental conditions. The user of a smart trigger must follow the manufacturers and the PERS supplier's recommendations concerning battery management and recharging.

PERS providers and equipment manufacturers and suppliers may not be held liable for any consequential losses or damages other than those determined by Australian Consumer Law.

Section 3 Components of a Monitored PERS System

3.1 Essential Components of a Monitored PERS System

A monitored personal response system *shall* include the following components:

- (a) a trigger device which can be used to summon help in the event of a user needing assistance
- (b) a hands-free voice communications facility enabling communications between a user and a monitoring facility operator
- (c) a monitoring facility which is staffed by personnel and capable of receiving calls for assistance at all times and during extended power failures
- (d) an off-site back-up monitoring facility which can provide the same function as the monitoring facility within four (4) hours of a monitoring facility or local telecommunications service outage
- (e) an information system capable of identifying the identity of the user, and/or fault conditions
- (f) an off-site back-up information system capable of being activated within a prescribed time period.

3.2 Optional Components of a Monitored PERS System

A monitored personal response system *may* include the following components:

- (a) other local equipment or functions intended to detect a situation where a user needs assistance
- (b) a local unit
- (c) a gateway device which may not include all the functions of a local unit.

Section 4 Regulations and Standards

4.1 Radiocommunications, Telecommunications and EMC

All electronic equipment must comply with relevant Australian Communications and Media Authority (ACMA) radio communications, telecommunications, electromagnetic compatibility (EMC) and electromagnetic emission safety (EME) regulations.

4.2 Australian and New Zealand Standards

All equipment shall comply with any relevant Australian and New Zealand product Standard for PERS the current Standard is AS4607:1999. If the PERS cannot comply with the current standard it shall give equivalent or superior results to those specified as per 1.3 of the standard.

All electrical equipment shall comply with any relevant Australian Electrical Safety Standard.

All electrical wiring performed during installation shall be in accordance with the version of AS/NZS 3000 which is current at the time.

All telecommunications cabling performed during an installation shall comply with any relevant Australian Cabling Provider Rules.

All information systems shall comply with any relevant Australian and New Zealand information storage and retrieval Standard.

4.3 Manufacturing

All equipment shall be manufactured to a recognized quality system and independently tested to appropriate standards.

Section 5 **General Technical Requirements**

5.1 Fit for Purpose

Equipment shall be easy to use by persons with impaired physical or cognitive ability. All controls intended to be operated by the user shall be easy to use and clearly visible. Alarm trigger controls should provide visual and audible feedback to the user.

A variety of personal trigger devices should be available for persons with special needs (i.e. pendants, pressure pads, blow switches and the like).

5.2 Compatibility with Other Technologies

When other devices and technologies share systems with a PERS, connection attempts from the PERS shall take priority.

5.3 Acknowledgement and Retry of Alarm Transmissions

If an alarm call is unsuccessful the local equipment shall continue to attempt communications with the Monitoring Facility as follows:

- (a) in the case of local equipment connected to a mobile phone network, the NBN, or the PSTN, the local equipment shall make the maximum number of call attempts permitted by regulation
- (b) in the case of an IP alarm, following an alarm activation it is recommended that the equipment should attempt to send that alarm data at reasonable timed intervals over at least a period of 4 hours
- (a) if an alarm transmission has not been successful within the permitted number of retries, the local equipment shall provide a warning indication to the user and reset to the idle state.

5.4 Battery Backup

All mains powered components of local equipment shall contain a battery back-up. This back-up shall have sufficient storage capacity to enable operation in the *idle state* plus ability to perform five (5) complete emergency call sequences in the case of a power failure lasting 40 hours.

5.5 Communications Redundancy

Communications network *redundancy* is recommended:

- (a) in any short-range wireless communications link by way of redundant data transmissions it is recommended that time and or frequency diversity techniques are used to mitigate the possibility of interference

- (b) in any long-range communications link by way of multiple access networks and or multiple telecoms service provider access.

At the time of publication, the following would satisfy this condition:

- (a) a mobile phone service with dropdown backup (5G to 4G, 4G to 3G etc)
- (c) a fibre voice/data carriage service with mobile phone service backup (smart-modems with 4G backup and battery backup)
- (d) a mobile phone only service using multiple telecoms service providers (multiple SIM services).

5.6 Audible Alarms

Audible alarm sound levels should be appropriate to the situation. Where used, they shall be within the frequency band of 400 Hz and 3 kHz. They shall be either a pulsing or a swept frequency tone at a minimum sound level of 70 dB(A) at one (1) metres.

5.7 Equipment Watchdog Function

All equipment that contains a *stored program computer*, shall include a hardware or software watchdog function. The watchdog function shall run a program routine which constantly performs a task and performs an automatic system restart in the event of a program execution failure.

This requirement does not extend to devices where a microcomputer is only activated for short periods in response to a user action i.e. portable trigger devices.

5.8 Non-Volatile Memory

All configuration settings shall be stored in non-volatile memory. The equipment shall return to the idle state immediately after a power failure and without the loss of stored information.

In-progress alarm and supervisory events shall be completed following any equipment power-down or reset without loss of stored information.

5.9 Electromagnetic Immunity

All equipment inputs and outputs shall be suitable for their intended purpose. They shall be designed to minimize the incidence of false activations and/or damage from electrical or electromagnetic interference.

Section 6 **Trigger Devices**

6.1 **All Trigger Devices**

Trigger devices for PERS are typically:

- (a) devices worn by the user and equipped with an emergency button. They may also include a fall detector
- (b) a fixed-location emergency call button
- (c) a data collection device such as an *environmental monitor*, *physiological monitor*, or inactivity monitor.
- (d) Sensor devices that are used to provide an indication that there is a potential risk (enuresis detectors, bed sensors, wandering patient sensors ect.)

Trigger devices may communicate with:

- (a) local equipment within the user's premises using a short-range communications link, typically using low-power wireless technologies
- or
- (b) a 24/7 monitoring facility using a long-range communications link, typically using high-power wireless technologies such as mobile phone networks.

A trigger device may be operated either manually or automatically.

Trigger devices shall immediately return to their idle state after activation and be ready for the next activation.

Trigger devices should be designed to minimize the risk of false activation.

Manually operated trigger devices should have an activation delay of between 0.25 and 1 second to guard against accidental activation.

All trigger devices that operate over a wireless long-range communications link should have a means of indicating network availability and network signal strength.

All trigger devices shall be able to be cleaned without affecting their function or becoming hazardous.

It is recommended that wireless trigger devices should be designed with a level of redundancy at least equal to two-way technology with the local unit to provide feedback to the user of a successful trigger from the trigger device itself

6.1.1 **Manually Operated Trigger Devices**

All manually operated trigger devices shall:

be easy to use, clearly visible and have trigger controls that are identifiable from their surrounding surface by a tactile surface and or contrasting colour or other means e.g. haptic feedback

- (c) have trigger controls that are separated from other controls by at least 10mm
- (d) provide visual or audible and or haptic feedback to the user.

6.1.2 Portable Trigger Devices

All portable trigger devices shall:

- (a) be lightweight and have a water resistance classification of at least IP67 as defined in AS 1939
- (b) shall survive a free fall test of 1.0 +/-0.1 metres five times onto a smooth concrete surface not less than 10 mm thick, after which they shall function correctly and shall show no signs of physical damage
- (c) if a neck cord is provided it shall break within 10 seconds when subjected to a longitudinal force of 50 Newtons.

6.1.3 Wet Area Fixed Trigger Devices

All wet area fixed trigger devices shall:

- (a) have a water resistance classification of at least IP65 as defined in AS 1939
- (b) be positioned within easy reach of the bath, shower or toilet
- (c) if ceiling-mounted with a pull cord, the pull cord shall be fitted with a weak link within 50 mm of the switch and shall break within 10 seconds when subjected to a longitudinal force of 50 Newtons

6.2 Passive Trigger Devices

Passive triggers activate in response to a user pressing a button. They typically communicate with a local unit over a short-range communications link and have long-life lithium batteries. A passive trigger device may include a fall detector.

6.2.1 Radio Range to Intended Receivers

All short-range wireless devices shall have a minimum operational range in *open space* of at least 50 metres.

During equipment range testing by the manufacturer or supplier, the receiver, or its associated antenna if not an *integral antenna*, shall be mounted one (1) metre above the ground.

During range testing the trigger device shall:

- (a) in the case of a worn trigger device, be held or worn by a standing person consistent with its intended mode of operation. The person shall rotate in 30-degree increments. The trigger device shall successfully activate the receiver at each 30-degree increment.
- (b) in the case of a fixed-location trigger device, be positioned on a rotatable non-conducting surface one metre above the ground. The trigger device shall be rotated in 30-degree increments. The trigger device shall successfully activate the receiver at each 30-degree increment.

6.2.2 Battery Requirements

Passive triggers operating over a short-range communications link are typically powered by a *primary battery*.

All batteries used in short-range trigger devices shall:

- (a) when a primary (non-rechargeable and non replaceable) battery is used, have an expected battery life of at least two (2) years and 400 alarm trigger events within 2 years
- (b) when a secondary (rechargeable) battery is used together with a charger circuit, have an expected battery life of at least 36 hours and five (5) complete alarm trigger events. A means of charging shall be provided for triggers with secondary batteries.

6.3 Smart Trigger Devices

Smart trigger devices have active functions such as position reporting, periodic test signals, fall detection, environmental and physiological monitoring. Their characteristics and requirements depend to a large extent on their function and intended usage. They typically communicate directly with a Central Monitoring Facility over a long-range communications link.

6.3.1 Radio Range

The radio range of smart triggers will be determined largely by the availability of compatible wireless networks. This is outside the scope of this Guideline.

6.3.2 Battery Requirements

Smart triggers may be supplied with a variety of battery technologies depending on their intended usage.

Trigger devices that operate over a long-range communications link are typically powered by a *secondary battery* and supplied with, or contain, a mains-powered battery charger.

The battery life of smart trigger devices will vary depending on the type and age of the battery, the type of usage, and the local environmental conditions. The user of a smart trigger must follow the manufacturers and the PERS supplier's recommendations concerning battery management and recharging.

Visual feedback of battery charge state should be provided to the user. The visual indication should remain until the battery reaches end of life. This may be achieved by a change in the colour of a light.

A means of charging shall be supplied with each trigger device that uses a rechargeable (secondary) battery.

6.3.4 GPS Function Requirements

Trigger devices that incorporate a GPS function typically pass position information to a monitoring facility via long-range wireless data services.

The amount of information passed and the update rate, which together will determine the battery run-time, shall be determined on an application specific basis.

6.3.5 Environmental and Physiological Alarms

Environmental and physiological alarms may sound a local alarm during a pre-alarm period.

If the alarm is not cancelled within the pre-alarm period, the alarm may alert the monitoring facility of the alarm and the type of alarm event.

6.3.6 Fall Detectors

A trigger device may include a fall detector. Fall detectors typically include an accelerometer or inertial detector and a software algorithm to detect the incidence of a fall.

6.4 Data Collection Devices

This Guideline does not apply to sensors and/or data collection devices. They may be incorporated into a PERS system provided they do not interfere with the mandatory requirements of this Guideline.

Section 7 Local Unit Requirements

Local unit is a term used in AS4607 to describe a gateway/terminal device that receives the trigger signal and relays alarm information to a monitoring facility. A local unit also provides equipment status audible/visual indications to the user, and two-way loud-speaking voice communications.

A local unit is not a mandatory requirement under this Guideline but if used it forms part of the local equipment.

7.1 General

If a local unit is provided it shall be located within the premises of the user or group of users.

A local unit shall be equipped with a pre-alarm period in response to an alarm trigger event.

A local unit shall have an audible and visual *pre-alarm signal* during the pre-alarm period.

A local unit may include an alarm trigger button and a *cancel button*. It shall only be possible to cancel an alarm during the pre-alarm period.

If alarm trigger and cancel buttons are pressed simultaneously the alarm trigger button shall take priority and shall initiate an alarm sequence.

Alarm trigger buttons and the alarm cancel buttons shall be at least 15mm across their diagonal and arranged so they are at least 10mm separated from each other and other buttons and controls.

Knobs, handles, buttons and the like used to initiate an alarm shall be readily identified by a tactile surface and a contrasting colour and should have a label clearly identifying their function.

A local unit shall have a means of identifying the radio signal strength from local trigger devices. This may be done by:

- (a) the local unit or receiving device providing a method of indicating received signal strength from the trigger device, and a minimum indication specified which is at least 6dB above the minimum signal required
- (b) placing the receiver into a -6dB sensitivity mode during range testing. (6dB is the requirement stated in AS4607. A greater margin is recommended)

If a local unit communicates over a long-range wireless communications link, it shall have a means of identifying the received signal strength of the wireless signal.

If a local unit communicates over a hard-wired long-range communications link, it shall have a means of identifying the connectivity integrity.

In addition to the requirements of Section 5, a local unit shall send a supervisory signal to the Monitoring Facility at least weekly.

If a local unit has been placed into any test mode that is not the idle condition, the local unit shall automatically reset into its idle condition within 15 minutes.

A local unit shall be constructed so it can be cleaned without compromising its design or becoming hazardous.

A local unit shall be labelled with the name and 24-hour contact phone number of the monitoring facility.

The local unit shall comply with all local regulatory requirements.

7.2 Transient protection on hard-wired inputs

Equipment should have protection against transient damage on all hard-wired inputs in accordance with relevant parts of EN 55024.

7.3 Radio receiver performance

Short-range radio receivers used in local units shall have the minimum performance characteristics as defined in AS4607.

7.4 Recognition of trigger signals

Trigger signals from passive triggers/passive pendants to a local unit shall:

- (a) be modulated with a unique coding system capable of recognising at least 32,000 uniquely identifiable codes
- (b) include a recognised technique such as a checksum or CRC error
- (c) activate the pre-alarm condition within two (2) seconds.

Trigger signals from *smart pendants* to a local unit shall:

- (a) use coding, error correction, and transmission techniques appropriate for the technology employed
- (b) for technologies that require the trigger and the local unit to be 'paired' or 'registered together' this shall be an automatic process that does not require user intervention
- (c) for technologies that do not maintain connectivity between the trigger and the local unit, connection and local unit activation shall occur within five (5) seconds of a trigger event
- (d) for technologies that do maintain connectivity between the trigger and the local unit, local unit activation shall occur within five seconds of a trigger event.

- (e) for technologies that do maintain connectivity between the trigger and the local unit If connectivity between the pendant and the local unit is lost, reconnection attempts shall be made at least once every 15 seconds.

7.5 User Reassurance signals

A local unit shall give visual signals to the user:

- (a) in the *idle state*
- (b) when the local unit is activated
- (c) during a pre-alarm period
- (d) if the mains power has failed
- (e) if the long-range communications link has failed

A visual signal may be in the form of a single light that changes colour or separate lights for each function, or other visual display.

Indicator light(s) shall be readily visible from a wide viewing angle from the front of the unit.

A visual *fault indication* shall remain until the fault condition has cleared.

The local unit shall give audible signals to the user:

- (a) during a pre-alarm period
- (b) when the alarm transmission has been successful
- (c) if an alarm transmission has not been successful.

Audible indication should be used with caution as users may be woken in the night by a brief service outage.

An audible signal may also be a human or synthesized voice.

7.6 Reset after activation

The local equipment shall reset to the *idle state* after an event has been received and processed by the CMF. The local equipment shall immediately return to the idle state ready for another activation.

7.7 Alarm retries

If a local unit fails to communicate with the CMF as expected it shall perform subsequent communication attempts permitted by regulation. In the case of an IP alarm, following an alarm activation, it is recommended that the equipment should attempt to send the alarm data at reasonable time intervals over at least a period of 4 hours unless restricted by regulation.

7.8 Stored Event Log

All alarm events, conditions and faults, shall be recorded in an event log within a local unit or have a timely appropriate Device Management System that facilitates storage of data.

The event log must contain:

- (a) the type of event
- (b) the date and time of the event
- (c) the local unit condition when the event occurred
- (d) the type and duration of the event
- (e) other relevant information.

7.9 Hands-free voice range

A local unit shall provide hands-free voice communications between the user and the CMF. The microphone sensitivity and loudspeaker volume shall be sufficient to allow a normal hands-free conversation over a minimum range of five (5) metres from the local unit.

7.10 Privacy

A local unit shall not be capable of acting as a listening device without a call being initiated, or manually answered, by the user.

Section 8 **The Long-range Communications Link**

The long-range communication link may be by any technology that meets the following requirements.

The link shall provide a high degree of service availability. Public telecommunications networks that are provided by major telecoms service providers are deemed to meet this requirement.

All alarm signals shall be acknowledged. If a local unit fails to communicate with the CMF as expected it shall perform subsequent communication attempts in accordance with Clause 7.7.

Alarm local equipment and telecommunications equipment and services shall be configured in such a way that alarm event signals shall be given priority over all other devices and services. In PSTN or simulated PSTN connections this is referred to as a *mode-3 connection*.

At the end of an alarm session the PERS shall revert to the idle state.

Section 9 The Monitoring Facility

A monitoring facility (CMF) is a facility or network of facilities that receives alarm and/or supervisory signals from dispersed PERS (the local equipment) and initiates appropriate responses.

A CMF must comply with the minimum requirements of AS4607

9.1 Staff levels

CMF resourcing should be based on the alarm traffic requirements experienced by the CMF during peak call periods.

The CMF shall have no less than two (2) staff on duty at all times.

The CMF shall have sufficient CMF operators available to meet the required *response times* in accordance with the requirements of Table 1.

9.2 Staff training

The CMF shall instigate a documented orientation program for all new members of CMF staff.

All CMF operators shall receive refresher/update training at least on a yearly basis.

All CMF operators shall possess a current Level 1 First Aid Certificate or higher qualification.

All CMF operators shall obtain a relevant state based or National Police check

9.3 Alarm classification

All alarm events received by the CMF shall be classified according to their type of event. Alarm calls deemed to be urgent shall be given a higher priority than non-urgent and supervisory events.

Urgent events in a queue shall be easily identifiable by the CMF operator.

9.4 Alarm response times

The time period between the reception of an alarm event at the CMF and the initial response shall be measured and recorded.

The CMF shall respond to events in accordance with the requirements of Table 1.

Table 1 — Monitoring Facility Response Times

Type of Event	Event Response Time (max) ^g	Time to Action	Time to Follow Up
Emergency	2 min for 90%	Immediate	Within 1 hour attempt to verify a response to the event. Within 24 hours confirm and record the response.
User inactivity	10 min for 90%	Immediate call to user	If no response, treat as an emergency call.
Local unit mains power failure or low battery	8 hours ^b	48 hours	Notify user and/or user's representative.
Local unit malfunction	8 hours ^{a, c, d}	8 hours	Notify user and/or user's representative within 8 hours. If replacement necessary, replace local unit within 1 week.
Trigger device low battery	8 hours ^{a, e}	1 week	Notify user and/or user's representative within 1 week. If replacement necessary, replace trigger within 2 weeks.
Trigger malfunction	8 hours ^{a, c, d, f}	2 days	Notify user and/or user's representative within 8 hours. If replacement necessary, replace trigger within 2 days.
Assistance			

^a Calls of a non-urgent nature should only be made between 7.00am and 9.00pm at the called party location.

^b In the case of a wide-area mains power failure or communication provider outages, with multiple supervisory signals being received at the CMF, the CMF manager shall have the discretion to delay contacting users pending resumption of the power supply.

^c The user's geographic location will have considerable bearing on the response times to repair or replace faulty equipment. Each CMF and alarm service provider should have a procedure in place to deal with faulty equipment.

^d Only for local units that make a periodic check-in to the CMF, or if the CMF has been contacted by the user or the user's Representative.

^e Only for triggers with an internal battery.

^f Only for triggers that make a periodic check-in to the local unit or the CMF.

^g Response times do not include any transmission delay between the local equipment and the CMF.

9.5 Event Recording

All alarm events of an urgent nature shall be recorded in a data file and kept for a minimum of five (5) years.

All voice conversations between the CMF operator and the alarm user in response to an alarm activation shall be recorded and kept for a minimum of five (5) years.

9.6 Cloud Services

Cloud Services used by the CMF shall comply with all Australian regulatory requirements in force

CMF shall have policies and processes in place regarding user information, security and integrity.

9.7 Data Security and Data Retention

The CMF shall at all times seek to apply data security and data retention best practices. Data shall be backed-up at least daily and stored off-site for a minimum period of five (5) years.

9.8 CMF Power Supply

The CMF shall have a back-up power system capable of allowing uninterrupted operations of the monitoring facility for a period of at least one week in the event of an extended power failure unless the CMF has a secondary site capable of supporting all functions.

9.9 Remote Backup Facility

The CMF shall have access to a remote backup facility capable of performing all critical functions of the CMF.

The backup facility shall be located remote from the CMF so that it is unlikely to be affected by the same events that affect the CMF.

The back-up facility shall be a stand-alone facility and shall not rely on any hardware or software resources located at the CMF.

The back-up facility shall not rely on any telecommunications or data resources or servers located at the CMF.

The back-up facility shall be capable of being fully operational within four (4) hours.

9.10 Telecommunications Network Redundancy

To the extent possible, both the CMF and the back-up facility shall have redundancy built into incoming and outgoing telecommunications links.

9.11 Call lockout

A monitoring facility shall not use any *call lockout* method to block or ignore alarm events unless deemed a necessity for operational security purposes.

9.12 Testing and Audit Procedures

The performance of CMF systems shall be subject to regular audit.

Section 10 User Suitability and Selection of Technology

The provider of a PERS to an end-user must consult with the end-user to determine the best selection of available technology in order to meet their needs.

Where the PERS is provided by a monitoring facility, a *care facility* or a distributor, the monitoring facility, care facility, or distributor should liaise with the original equipment supplier to evaluate they are aware of the available technology and its features and limitations.

The provider of a PERS to an end user should have processes in place to evaluate the user is able to correctly use the local equipment, and that the user and/or the user's representative is aware of the features and limitations of the equipment.

The provider shall evaluate that the telecommunications *access technology* is suitable prior to PERS provision.

10.1 Evaluation of Potential PERS Users

Some potential users, due to cognitive impairment or other conditions, may not be suitable for a traditional monitored PERS. This is often the case where user suffers dementia or other mental impairments that prevent them from understanding the purpose and correct use of the alarm and local equipment. Consideration should be given to consult with appropriate professionals and Carer support networks to provide the appropriate solution.

10.2 Technology Selection

PERS are available with a variety of additional features and functions. The selection of the type of PERS, and associated functions, should be made with the user's needs in mind. Consideration should be given to deactivating features that are not required or able to be used.

10.3 Access Technology Selection

The user's telecommunications access technology shall be evaluated prior to, or during the installation of, installing a PERS. In the case where the access technology is a wireless technology, this must include an evaluation of the wireless signal strength in the user's premises. The evaluation shall be made using identical local equipment, or signal strength measuring equipment.

In cases where the access technology is deemed to be unreliable in the user's premises, an alternative access technology must be provided or the user and/or the user's representative informed that a PERS cannot be supplied.

10.4 Mobile Wireless PERS

When a mobile PERS is planned to be supplied which is also intended to operate outside the user's premises, the user and or the user's representative must be informed the device will only operate in areas with suitable wireless network coverage.

10.5 Fall Detection

When a fall detector function is planned to be supplied, the limitations of fall detection technology must be communicated to the user and or the user's representative. The user and or the user's representative must be aware that some types of falls may not be detected.

Section 11 Service Establishment

11.1 Initial Contact

All sales and marketing staff shall be made aware of the vulnerable nature of PERS users. Pressure or forceful sales techniques shall not be used.

Callers shall identify themselves and their organization to all persons associated with providing a PERS.

11.2 Service Provision

Prior to service provision the client shall be informed of:

- (a) details of the service
- (b) all fees and charges
- (c) applicable cooling off periods
- (d) customers right to cancel the service in accordance with Australian Consumer Law
- (e) customer's responsibilities
- (f) who will be installing the system, and when.

11.3 Evaluation of Needs and Equipment Suitability

Prior to providing a PERS the following items need to be assessed:

- (a) the needs of the user and their ability to use the local equipment correctly
- (b) the environment in which the local equipment will be used and its design suitability
- (c) the most suitable location for any local unit and/or other equipment.
- (d) the coverage area of the trigger device
- (e) the need for any modifications to the premises such as additional power points, etc
- (f) in the case of local equipment using a wireless long-range link, the signal strength of the wireless network
- (g) any limitations that could affect the operation of the equipment within the user's premises.

The user shall be advised of any recommendation outcomes from the assessment.

11.4 Selection of Nominated Contacts

Nominated contacts should

- (a) Be selected by the user or the user's representative
- (b) Be willing and able to respond to an emergency situation at any time
- (c) Reside within reasonable travelling time from the user.

11.5 User Information

Prior to equipment provision sufficient information shall be given to the monitoring facility to allow a competent emergency response.

Information received shall be checked to ensure all required information is provided. If the information is incomplete the user, or the user's representative, or the client shall be contacted within one business day and requested to submit further information.

If additional work is required prior to establishing the service, any third party should be contacted in a timely manner and calls made to confirm the work has been completed. The frequency of follow-up calls should be determined by the urgency of the request.

11.6 Information to Nominated Contacts

The monitoring facility shall provide access to written instructions to the nominated contacts advising them what to expect in the event of a PERS emergency call and other requirements.

11.7 Consent to Provide Information

The user shall provide written consent for the provision of their personal information to proposed contacts.

11.8 Consent to Act

Nominated contacts agree to being listed as an emergency contact and they must be willing to receive emergency calls from the CMF operator at any time.

Consent to be a nominated contact may be withdrawn at any time, and that contact shall be removed from the list of emergency contacts within seven (7) days.

Section 12 Equipment Installation

12.1 Installation by Authorised Installer

An installation time shall be agreed between the *installer* and the user or the user's representative.

If the installer is delayed the user should be advised and a new installation time agreed.

Installation shall be in accordance with the manufacturer's and the monitoring facility's written instructions.

All personnel installing local equipment shall be authorized by the CMF and/or alarm service provider as competent persons to connect a PERS service.

12.2 Installation Testing

To ensure that the system performs as designed, it shall be tested at the time of installation in accordance with the monitoring facility's instructions.

The user and or the user's representative should be in attendance during installation testing.

A call shall be made into the monitoring facility from each trigger device to as closely as possible simulate an emergency activation.

If other technologies share the same telecommunications link, the PERS shall be tested with other technologies in the active state i.e. house telephones which share the same telecommunications service shall be off-hook.

12.3 Testing Short-range Trigger Devices

Trigger devices that operate over a short-range communications link shall be tested from a variety of areas within the client's premises.

The user shall be informed of locations where the system does not function because of obstacles or environmental factors. This range shall be clearly explained to the user.

12.4 Testing Long-range Trigger Devices

Trigger devices that operate over a long-range communications link shall be tested from a variety of areas within the user's premises.

Long-range trigger devices should have a means of indicating network signal strength.

The minimum signal strength determined acceptable should be at least 30% of the maximum indication.

The user shall be informed that the system will not function in areas of poor wireless network coverage.

12.5 Testing Voice Performance

When the local equipment has a voice function, the voice performance and voice range shall be demonstrated to the user or the user's representative.

12.6 Labelling

Warning labels shall be fixed to all PERS power plugs warning that the equipment should not be disconnected or the power switched-off.

Labels shall present information clearly and unambiguously and be in a contrasting color. If the information is written it shall be in no less than 12pt font. Where there is not a conflicting regulatory requirement, information may also be presented graphically.

Warning labels shall not obscure regulatory labels or compliance marks.

12.7 Power Supply Connection

Use of double adaptors and power boards should be avoided as they are a common cause of faults. Extension leads should only be used temporarily until a permanent power point can be installed.

12.8 Self-Installation

When local equipment is to be self-installed by the user, the user's representative or the client, clearly documented installation instructions shall be supplied to the user.

The installation instructions shall include installation and testing procedures in accordance with this Guideline.

A help-line shall be available to assist with self-installation. The help-line shall be available at least during business hours.

Section 13 Returned and Recycled Equipment

When the alarm service provider or monitoring facility retains ownership of local equipment, it may be recycled between users, provided:

- (a) the equipment is disinfected in accordance with local health guidelines
- (b) the equipment is hardware and software upgraded when upgrades are available
- (c) the equipment is functionally tested and cleaned.

13.1 Battery disposal

The monitoring facility and or alarm service provider shall have a procedure in place for the correct disposal of batteries. Batteries shall be disposed of by following the recommendations of the battery manufacturer and or local regulation.