

CODE OF PRACTICE

# Safe use of close proximity fireworks in Western Australia







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# Foreword

## The Act

A key focus of the *Dangerous Goods Safety Act 2004* (the Act) is the duty to minimise risk from dangerous goods. This duty not only applies to employers and employees but to all persons, including members of the public. This duty is placed on everyone involved with dangerous goods, and goes beyond the workplace duties of the *Occupational Safety and Health Act 1984*. Public safety is one of the most important features of the Act.

## Regulations

The Act is supported by the Dangerous Goods Safety (Explosives) Regulations 2007 (the Explosives Regulations). It is essential to understand and comply with this legislation and adopt a risk management approach using all relevant codes and standards.

The Explosives Regulations are enforceable and breaches may result in licence suspension, prosecution, or directions to cease operations and undertake remedial action.

## Application

This code of practice is a prescribed document under the Explosives Regulations and therefore all licence holders and their secure nominees must comply with this code when using close proximity fireworks.

## Standards

Although reference is made in this code of practice to specific versions of Australian and other standards, it is good practice to consult the latest versions where applicable.



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# 1 Introduction

## 1.1 Background

Close proximity fireworks are intentionally designed for use near or close to performers, spectators, users or others involved in the event. Unlike outdoor fireworks, which must only be used outdoors, close proximity fireworks may be used either indoors or outdoors. This includes the use of specially produced pyrotechnics for use at stadium locations, such as sports events and entertainment performances.

Close proximity fireworks are sometimes referred to as indoor or theatrical fireworks or close proximity pyrotechnics. The possession and use of close proximity fireworks by the general public is banned in Western Australia. Only properly trained and authorised people are permitted to handle these types of fireworks.

While it is not possible to achieve zero risk when handling close proximity fireworks, audiences can safely enjoy close proximity fireworks display events if sufficient precautions are taken to reduce the likelihood and consequences of an incident.

This code of practice covers the principles of safe transport, storage, handling, and use of close proximity fireworks. Compliance with this code will ensure a high standard of safety within the fireworks industry.

This code also addresses the security requirements expected for close proximity fireworks.

## 1.2 Application

This code applies to the control of all close proximity fireworks intended for entertainment or recreational purposes in Western Australia, and describes the measures people must take to minimise risk under section 8 of the Act.

A close proximity firework means a firework, whether designed and labelled to be used indoors or outdoors, that is designed to be electrically initiated only, and either:

- manufactured commercially and is designed and labelled as suitable to be used in close proximity to a person
- manufactured from commercially available constituents that are designed and labelled as suitable to manufacture fireworks to be used in close proximity to a person.

This code does not apply to:

- unrestricted toy fireworks available to the general public (e.g. party poppers and sparklers)
- cracker chains used for public ceremonies at which the use of cracker chains is a custom
- shop goods fireworks that are banned (e.g. backyard fireworks)
- outdoor fireworks used at public displays (e.g. aerial shells and ground packs)
- miscellaneous non-explosive special effects, such as LPG flares, that are frequently employed as part of a close proximity fireworks display.

Fireworks intended for outdoor use that are not close proximity fireworks must be used in compliance with the *Safe use of outdoor fireworks in Western Australia – code of practice*. Outdoor fireworks must not be used in indoor or outdoor close proximity fireworks displays. Outdoor fireworks can only be used under a fireworks event permit.

## 1.3 Approach

The duty to minimise risk and the performance requirements of this code form the foundation for a risk management approach to achieve safe outcomes.

This code addresses the training, knowledge and skills required by people involved with close proximity fireworks. A responsible attitude, commitment to follow legislative requirements, and high standards of safety are essential to minimise risk.

The emphasis is on developing and implementing control measures that, wherever possible, eliminate hazards associated with close proximity fireworks or substitute for safer products or equipment or isolate people from those hazards. Where elimination, substitution or isolation is not possible, activities should be planned and controlled through engineered solutions and/or administrative means such as documented work procedures.

For further information on risk management, refer to the Australian and New Zealand standard AS/NZS ISO 31000 *Risk management – Principles and guidelines*.

## 1.4 Alternative safety measures

This code sets minimum requirements that should provide an acceptable level of risk. Under some circumstances it may be possible to operate at a similar or a lower level of risk by using alternative safety measures. This code is not intended to exclude other safety measures and allows the use of other practices that afford at least equivalent safety outcomes.

An alternative safety measure must be documented and presented to a dangerous goods officer upon request. It should outline which part of this code is being replaced by other measures and, based on risk assessment principles, explain why the alternative measures represent equal or reduced risk. Persons undertaking risk assessments to support alternative safety measures must be competent in conducting risk assessments and have suitable knowledge and experience of explosives and their properties, as well as the proposed application.

The use of this code serves as a defence against possible prosecution action involving close proximity fireworks. By using an alternative safety measure instead of this code, the defence against possible prosecution relies on the alternative safety measure and, for this reason, original alternative safety measures should be signed, dated and retained as a record.

# 2 Minimising risk to people, property and the environment

## 2.1 Overview

The Act imposes a duty to minimise risk on all people involved with dangerous goods. It requires that a person who is engaged in activities involving close proximity fireworks must take reasonable measures to minimise the risk to people, property and the environment. The Act gives force to the Explosives Regulations and any standards and codes cited therein, such as:

- this code of practice
- AS 2187.1 *Explosives – Storage, transport and use – Storage*
- AS 2187.2 *Explosives – Storage and use – Use of explosives*
- *Australian Code for the Transport of Explosives by Road and Rail*, Third Edition (AEC).

The Act is not the only statute covering close proximity fireworks activities. While this code is primarily focused on the requirements under the *Dangerous Goods Safety Act 2004*, other Western Australian statutes that may apply include:

- *Fire and Emergency Services Act 1998*
- *Bush Fires Act 1954*
- *Local Government Act 1995*
- *Occupational Safety and Health Act 1984*.

This code of practice is mandatory for all licence holders and their employees before using, when using and after using close proximity fireworks in accordance with regulation 135 of the Explosives Regulations. However, it allows acceptable alternative safety measures that are equally safe.

## 2.2 Responsible people

### General

Responsibilities are not limited to those covered in this code. There is an overriding general duty for anybody coming into contact with close proximity fireworks to minimise risk. This includes:

- protecting the health and safety of themselves and other people
- being an appropriate person (e.g. mental fitness)
- ensuring people are not under the influence of alcohol, banned drugs, or medication that significantly affects a person's performance
- controlling ignition sources within the vicinity at all times
- not engaging in inappropriate behaviour (e.g. skylarking)

- having the appropriate competencies and training to perform duties
- a commitment to following rules and adopting high safety and security standards.

A person is in breach of the Act should they direct or permit another person to undertake activities that are in contravention of the Explosives Regulations or this code. For example, a display organiser may not direct a licensed operator to conduct a display when it is not safe to do so.

### Security

All people with access to close proximity fireworks must have either a current dangerous goods security card (DGSC) or equivalent interstate security clearance and be suitably trained, or be under the direct supervision of such a person.

A dangerous goods security card is a prerequisite for the licensing of close proximity fireworks operators. Assistants under the direct supervision of a licensed operator do not need the card but they do if working unsupervised.

### People directly associated with close proximity fireworks displays

Key people directly associated with a close proximity fireworks display include the:

- site or venue owner and/or operator
- display host or event organiser
- licenced fireworks operator or pyrotechnics (special use) licence holder
- licenced fireworks contractor (if in conjunction with outdoor fireworks)
- fireworks operator staff
- event production staff
- performers
- audience.

As well as the people listed above, a duty to minimise risk also applies to people engaged in the:

- design and construction of close proximity fireworks
- design and construction of close proximity fireworks equipment
- purchase of close proximity fireworks
- sale or supply of close proximity fireworks
- testing of close proximity fireworks
- storage of close proximity fireworks
- transport of close proximity fireworks.

Appendix 1 describes the responsibilities for people involved with close proximity fireworks displays.

## 2.3 Licensing

### Pyrotechnics (special use) licence

Only individuals with a fireworks contractor, fireworks operator or pyrotechnics (special use) licence may use close proximity fireworks.

This licence is subject to conditions and authorises the purchase and use of close proximity fireworks, as well as the storage and transport of close proximity fireworks in limited quantities.

The pyrotechnics (special use) licence conditions for close proximity fireworks are listed in Table 2.1. Conditions are imposed based on training and experience as demonstrated to the chief dangerous goods officer (Chief Officer).

Operators commence with condition F on their licence. After completing ten displays without incident, condition F may be replaced by condition G upon request to the Chief Officer.

For a further upgrade, with condition H replacing condition G, a request, with supporting documentation, must be made to the Chief Officer.

Table 2.1 Pyrotechnics (special use) licence conditions for close proximity fireworks

Condition	Description
F	Operator may use close proximity fireworks but must not use large maroons, large gerbs, large outdoor close proximity fireworks or mix flash powder
G	Operator may use close proximity fireworks but must not mix flash powder
H	Operator may use close proximity fireworks and mix flash powder

*Note: If only a condition F licence is held, an operator may use close proximity fireworks but must not use large maroons [greater than 5 grams net explosives quantity (NEQ)] or close proximity fireworks with effects greater than 5 metres in height for indoor use or 10 m for outdoors use or mix flash powder.*

*Note: see Section 4.3 Operational requirements for the preparation of flash powder for flashpots.*

### Fireworks operator licence

An outdoor fireworks operator may apply to the Chief Officer to use close proximity fireworks as well as outdoor fireworks. This is granted as a condition on the licence, similar to those shown in Table 2.1.

### Interstate and international licences

Interstate close proximity fireworks licence holders may use close proximity fireworks in Western Australia, in line with what is permitted on their interstate licence and provided the interstate licence is current. It is not necessary to apply for a Western Australia pyrotechnics (special use) licence.

International operators who do not have an Australian licence (usually because they are doing a tour) must have an Australian licensed operator supervising their activities who possesses a current licence allowing them to undertake the activities required in the performance.

### Training and competence

Close proximity firework training courses are not readily available in Western Australia, but may be available in other states. Western Australian operators can gain practical experience under the supervision of another licensed operator who has the appropriate conditions on their licence. Where a person has worked under the supervision of a licensed operator for at least 10 displays, five of which were conducted by the person making application (still under the direct supervision of the licensed operator), and the licensed operator is prepared to provide a suitable reference the person can make application to the Chief Officer for their own licence.

## 2.4 Notifications

Display permits are not required for close proximity fireworks displays but notifications must be made. The close proximity fireworks operator must provide notice of the display at least seven days before the display.

The landowner, site owner or occupier's permission is required before a close proximity fireworks display can be conducted. For public locations, this will involve local government approval.

The operator must notify the local Department of Fire and Emergency Services (DFES) representative in writing at least seven days before a close proximity fireworks display. The notification must include the:

- name of the operator
- operator's licence number
- details of close proximity fireworks to be used
- time and date of the display
- location of the display
- confirmation of the building or land owner's permission for the display
- name of the display or its purpose.

Upon receipt of the notification, DFES may get involved with the fire risk assessment and planning for the display. DFES may issue conditions for the display, or stop the display from proceeding.

## 2.5 Outdoor use of close proximity fireworks

Close proximity fireworks can be used outdoors, including those designed for indoor use. If close proximity fireworks are used outdoors the minimum exclusion zone required will be as stated in the technical data sheet. For outdoor fireworks, the exclusion zone will be as stated in the *Safe use of outdoor fireworks in Western Australia – code of practice*.

DFES and local government have joint responsibility for bushfire prevention across Western Australia. The DFES mandatory requirements listed in Appendix 2 are applicable when any fireworks, including close proximity fireworks, are used outdoors.

DFES provides fire and rescue services within gazetted fire districts, including metropolitan and over a hundred regional locations. Local government provides and is responsible for fire services through a network of bush fire brigades outside these areas. DFES or local government officers may take action to prevent a close proximity fireworks display from proceeding. However, it is expected that fireworks operators applying the DFES conditions in Appendix 2 will arrive at the same decision before the need for direct action by DFES or local government.

# 3 Supply, storage and transport

## 3.1 Supply of close proximity fireworks

Only the holder of a licence to supply explosives, or their secure nominee, may sell or supply close proximity fireworks to a licensed pyrotechnic (special use) operator.

Close proximity fireworks must be supplied with recognised safety performance levels and supported by documentation and labelled or described as suitable for use as close proximity fireworks.

The licensed operator:

- must check that the close proximity fireworks have no known history of unsafe or unsatisfactory performance
- may give close proximity fireworks to their assistants who are secure nominees, but must not supply fireworks to others unless licensed to supply explosives.

## 3.2 Licensing exemptions for storage

A licence is generally required for the storage of explosives. However, the storage of limited quantities of close proximity fireworks by licensed operators is exempt from additional licensing, provided effective safety and security measures are in place.

The holder of a pyrotechnic (special use) licence does not require an additional licence to store explosives for the gross quantities of close proximity fireworks listed in Table 3.1.

Table 3.1 Exemptions for storage for licensed operators

Hazard division	Maximum quantity (kg) (gross weight)
1.1 or 1.2	2.5
1.3	15
1.4	30

Quantities of explosives that are exempt from additional licensing for storage must be stored in a container that:

- has, on its outside, a clear visible sign displaying “Explosives” or “Pyrotechnics”
- is made of, or lined with, a material other than a ferrous metal
- can be closed and locked
- when closed,
  - protects the explosive from the weather, contamination and sources of ignition
  - does not allow the explosive to escape or leak
- when locked, prevents removal of or access to the explosive by unauthorised people.

The container must be kept at least five metres from ignition sources and some means of fighting fires is recommended for limited storage (e.g. fire extinguisher or a nearby garden hose). If this distance is not achievable, the operator may conduct a risk assessment and put alternative safety measures in place.

The storage container cannot be stored inside a dwelling or a shop.

## 3.3 Licensed storage

A licence to store explosives is required for storage that exceeds the amounts listed in Table 3.1. The licensing process involves the preparation of an explosives management plan.

Any licensed storage of close proximity fireworks must meet the magazine and separation requirements of AS 2187.1.

A stock register must be kept of what is stored. Issue and receipt transactions must be recorded in the register. A stocktake must be conducted monthly.

## 3.4 Transport requirements

The AEC applies to the transport of close proximity fireworks in any quantity.

There are two licences applicable for the transport of explosives:

- a licence to transport explosives that applies to vehicle owners
- the explosives driver’s licence that applies to drivers of Categories 2 and 3 consignments of explosives.

Holders of a pyrotechnics (special use) licence for close proximity fireworks are exempt from both licences when transporting Categories 1 and 2 consignments of explosives.

# 4 Minimum safety requirements

## 4.1 Risk management

The risks associated with the use of close proximity fireworks will vary depending on the products selected and the environment in which they are used. A risk assessment should be undertaken to ensure that the display will be conducted at an acceptable level of risk, taking into account all the features and equipment at the venue. Matters for consideration as part of a close proximity display include:

- manufacturer's recommendations on the setting up and use of the fireworks
- firing points and clearance distances of the fireworks to the audience, performers, stage hands, licensed operator and licensed operator's assistants
- malfunctioning fireworks, human error and anticipated audience behaviour
- effective ventilation for managing expected heat, smoke and toxic gases produced by the fireworks when used indoors
- risk of accidentally triggering indoor smoke alarms and heat-activated sprinkler systems unnecessarily when used indoors
- interaction of fireworks with other special effects (e.g. confetti or streamers)
- risk of fire to the set including scenery, rigging, walls, ceilings, curtains and costumes worn by performers
- risk of an uncontrolled fire leading to the rapid generation of heat, toxic gases and smoke
- risk of trapping people indoors during a fire caused by fireworks due to mobbing and crushing at exits, increasing the risk of suffocation from toxic gases and smoke
- displays involving trained animals require animal handlers and should only be conducted at large indoor venues (e.g. a circus) or outdoors
- need for personal protective equipment (e.g. hearing protection, safety glasses, flameproof clothing, respiratory protection) for the licensed operator, licence operator's assistants and performers
- whether exposure to hazards such as smoke, toxic gases and noise are acceptable under health and safety guidelines
- risk of emergency equipment not working and personnel not responding when required
- risk of bushfire when close proximity fireworks are used outdoors
- security and supervision of fireworks by a licensed operator or their secure nominee.

## Emergency planning

The display organiser and licensed operator must have a documented emergency plan in place prior to the display. The emergency plan should include details of the:

- objectives of the plan, including the definition of an emergency
- roles, responsibilities and functions of all key stakeholders (e.g. display organiser, licensed operator, licensed operator's assistants, performers)
- hazards and types of emergencies that may arise from those hazards (e.g. audience panic resulting from an uncontrolled fire)
- plans for evacuation, firefighting and offsite emergency responders
- emergency procedures for the types of emergencies that may arise
- emergency equipment identified in emergency procedures
- training and education of staff and other stakeholders in the emergency plan and emergency procedures
- activation of the emergency plan and termination of the emergency
- reporting of incidents to the Chief Officer.

## Emergency procedures

Emergency procedures should address emergency scenarios such as:

- the outbreak of an unintended fire
- the hazardous malfunctions of fireworks
- a firework falling over and injuring a member of the audience
- uncontrolled members of the audience
- an injury or medical emergency involving the licensed operator, licensed operator's assistant or a member of the audience
- any other credible scenarios identified during the risk management process.

For indoor close proximity fireworks and prior to the display, checks should be conducted to ensure that all designated exits are visible, unobstructed, unlocked and can function as an effective means of escape in an emergency.

## 4.2 Fire prevention

Prior to conducting the display, a fire risk assessment must be prepared. The fire risk assessment must be conducted using risk management principles, in accordance with AS/NZS ISO 31000.

The following measures must be included for close proximity displays.

- Flammable materials on and around the stage or in close proximity to the fireworks must be kept to a minimum. As part of the risk assessment process, altering the set or using safer devices (e.g. confetti launchers) should be considered.
- All materials near the fireworks should be checked for combustibility and, where necessary, either treated to ensure fire resistance or protected by a suitable barrier with good insulating properties.
- The clearance distance to combustible materials must meet the manufacturer's recommended clearance distances, or twice the fallout radius. There must be adequate height clearances to ceilings and any overhead structures.
- A risk assessment must be conducted to determine the minimum clearance height required for ceilings and roofs and any structure directly above the fireworks. This should reference the firework's effects as detailed in the technical data sheet and confirmed during test firings of the product in a controlled environment.
- The effect of wind, if the close proximity fireworks are used outdoors, or forced air systems should be taken into consideration when planning set-up and calculating minimum clearance distances. Similarly, altering the firing angle of fireworks should be considered.
- Appropriate firefighting equipment must be readily accessible while close proximity fireworks are being loaded, prepared, fired and removed. Personnel who have received training in the effective use of firefighting equipment must be present during such times.
- During the display suitable firefighting equipment must be appropriately located and readily available. Operators must be aware that water fire extinguishers can create an electrical hazard if used near live electrical equipment.
- Close proximity fireworks must be kept well clear of naked flames, lights and other heat sources. Smoking is prohibited when handling close proximity fireworks, and audiences must be kept away when outdoors or otherwise in accordance with the manufacturer's instructions.

## Bushfire risk

The bushfire prevention requirements described in *Section 2.5 Outdoor use of close proximity fireworks*, as well as the requirements listed in Appendix 2, apply to outdoor displays of close proximity fireworks.

## Smoke control

When close proximity fireworks are fired indoors, the selection of fireworks together with the location and ventilation should ensure that the quantity of smoke produced is controlled so it does not:

- endanger human respiration, including irritation to people with respiratory disorders
- obscure the visibility of exit signs or paths of egress
- obscure the view of the licensed operator or their assistant who is in direct communication with the operator
- unintentionally initiate smoke alarms or sprinkler systems
- otherwise endanger people or property.

Fire detection and life safety systems should not be interrupted or turned off during the operation of close proximity fireworks. However, when using certain close proximity fireworks indoors, fireworks operators may consider it necessary to isolate elements of the fire safety system such as smoke detectors or other fire detection systems, or disengagement of air conditioning systems.

The following steps must be followed in these situations:

- ensure that such isolation is allowable as per the *Building Code of Australia*
- if isolation is allowable, prepare a fire risk assessment with the assistance of a specialist consultant and/or DFES
- advise DFES of the plan to manage fire safety issues before isolation or shut down of elements of the fire safety system
- obtain approval from the facility owner or their agent, noting that insurance implications may exist
- use a spotter to look for any fires
- provide a person for the period of isolation or disengagement, who is capable of directing the operation of all fire detection and life safety systems installed at the facility, and who can immediately notify emergency responders if necessary.

DFES should be advised of the level of smoke likely to be generated by the close proximity fireworks display. An on-site inspection and consultation may be required. Audience members close to fireworks should be adequately warned before the display starts.

If elements of the fire safety system have been isolated or shut down during the display, then they must be reinstated immediately after the display.



Fireworks contractors and operators should consider conducting test firing of close proximity fireworks at the venue, prior to an event, to fully understand the effects of the fireworks when fired.

## 4.3 Operational requirements

### Sourcing close proximity fireworks

Only commercially manufactured close proximity fireworks may be used.

- Close proximity fireworks must be supplied with instructions for use, including their performance characteristics (e.g. duration and size of effect).
- All close proximity fireworks must be purchased from people licensed to supply explosives.
- With the exception of an appropriately licensed operator preparing their own flash powder, it is illegal for any person to manufacture their own close proximity fireworks.

### Ignition sources

Close proximity fireworks must be kept at least five metres from uncontrolled ignition sources at all times. If the manufacturer recommends a greater distance, then that distance applies. Examples of potential ignition sources include cigarettes, pilot lights, mobile phones and electrical devices.

### Noise control

If appropriate and practical, neighbours should be notified that a display is planned, particularly for outdoor displays where noise may be an issue. The number of people affected by noise depends on the location, nature and time of the display. The operator can reduce noise by excluding loud items, increasing distances and shielding fireworks. Firing fewer items or reducing the firing rate can also reduce noise.

### Clearance to the audience and performers

The clearance distance imposed for a close proximity display must be in accordance with the technical data sheet for the products being used, but must never be less than three metres. The following factors must be considered when determining clearance distances:

- clearance to the audience may have to be increased beyond three metres to meet manufacturer's instructions or exceed twice the fallout radius, whichever is the greater
- location of potential ignition sources (e.g. smokers at outdoor venues)
- effects of forced ventilation systems or wind
- effects of height and angled fireworks
- health and safety considerations for noise, smoke and gases.

The fireworks operator should determine if the exposure of people to hazards (such as smoke, noise and toxic gases) as well as the duration of exposure, is at an acceptable level for health and safety exposure standards for the actual conditions that will exist during the display.

Manufacturer's instructions must be followed, and fireworks must not be tampered with or modified contrary to manufacturer's instructions. Depending on circumstances, it may be necessary to cordon off or delineate an area to ensure the audience does not encroach on the exclusion zone.

Personal protective equipment requirements for the operator and assistants and if necessary, the performers, must be determined by risk assessment. Consideration must also be given to the flammability of performers' attire and costumes at the time of the display.

Standard operating procedures incorporating the above principles must be prepared prior to the display. See Appendix 3 for guidance on standard operating procedures.

### Preparation of flash powder for flash pots

Flash powder may only be prepared by the holder of a licence to use close proximity fireworks issued with condition H, allowing the mixing of flash powder.

A licensed operator wishing to gain condition H on their licence needs to apply to the Chief Officer and:

- provide a standard operating procedure describing how the flash powder will be safely and securely prepared
- describe what chemicals will be used in preparing the flash powder
- describe the equipment used for the preparation of flash powder
- describe how the flash powder will be used
- describe the quantities to be produced at any one time and the quantities used per item.

Flash powder must be mixed at the venue prior to the display because it is too dangerous to transport, once prepared. Mixing must follow the manufacturer's instructions, and another person equipped with a fire extinguisher must be on standby. It is important to avoid unnecessary build-up of flash powder dust, and all ignition sources must be eliminated. Flash powder must be used at the preparation site within 24 hours of mixing.

## 4.4 Initiation equipment

Direct use of battery or mains power for firing close proximity fireworks is not permitted.

Electrical firing units must be appropriately designed and manufactured by a competent person and comply with the requirements of AS 2187.2. They must include a locking mechanism that can render the exploder inoperable, and be designed so that a two-step manual action is required for firing. The licenced operator is to be in possession of the locking key at all times.

Electrical firing units with built-in circuit testers must be designed to limit the test current to 50 mA or 20 per cent of the no-fire current of the electric match used, whichever is smaller.

Multimeters, such as volt-ohm meters, must not be used for testing electric matches unless the maximum current delivery potential has been measured and found to meet these requirements.

## 4.5 Conducting the display

Once the display is set up, the operator must ensure all safety measures have been taken and all mitigation methods are in place, and then conduct a final check of equipment and the positioning of close proximity fireworks. The operator must also ensure that anyone involved with the display has been briefed about their role before the display starts.

For large displays where the operator cannot see all of the firework products, the operator must appoint one or more assistants to ensure that:

- all performers, spectators and audience are outside the minimum safety distance at the time of firing
- no hazards are created by the close proximity fireworks (especially fire)
- all close proximity fireworks have functioned correctly.

Close proximity fireworks must always be electrically initiated using electrical firing units meeting the requirements as described in *Section 4.4 Initiation equipment*.

The licenced operator and their assistants may have to work with performers using cues and signals, but the operator still remains in full control of the display. If an observer detects an unsafe situation, they must notify the person firing the display immediately through direct communication. The person firing the display must stop the display and only recommence when safe to do so. If the situation gets out of control, the licenced operator must initiate the emergency plan.

The licenced operator is responsible for the handling, storage, security and firing of all fireworks at the display venue from the time the fireworks are delivered to site until they are used or removed. All close proximity fireworks must be kept in a suitably constructed

container except when set up for display (see *Section 3.2 Licensing exemptions for storage*).

In order to ensure control of the direction of sparks or smoke, close proximity fireworks must be properly supported or seated in holders or pods. They must be appropriately secured to stands or trusses and must be positioned appropriately. Their location must be marked or made known during rehearsals so performers know where they are located. Performers should be advised of their effects. They must not be fired while sitting unsecured on the ground, and pods must be used for all fireworks designed for use with pods. Pods, holders and fixing methods must not unnecessarily confine the fireworks such that they create a projection or shrapnel hazard in the event of a malfunction. Fireworks must be placed where they will not be inadvertently disturbed during the performance.

After the display, the operator must ensure that the electrical firing unit has been turned off and is isolated from all power sources, before proceeding with other post-display activities. All cables connecting the electrical firing unit to electric fuse heads must be disconnected or disarmed. The operator is to retain possession of the key for the firing unit.

It may not be possible to conduct a thorough inspection immediately after the display because the stage may still be in use or the event in progress. However, the licenced operator should determine that no burning material remains, so the performance can continue in safety. Operators should note the position of any misfired product and deal with it at the earliest appropriate opportunity, in accordance with their misfire procedure.

## 4.6 Post-display activities

### Cleaning up and disposal

A thorough inspection by a competent person must be conducted when the display is over to ensure no unfired fireworks remain and there are no other hazards. The licenced operator may then declare the area safe.

If the licenced operator deems an area to be still unsafe (due to such things as unfired or misfired pyrotechnics), the operator must ensure that such items are made safe before any other work is started. The licenced operator must clean up and declare the area free from close proximity fireworks before control of the site is returned to the display organiser and stage staff may carry out their work.

Unfired fireworks must be disposed of in accordance with Appendix 4.

### Reporting of incidents

The licenced operator must ensure all details of an explosives incident involving close proximity fireworks are reported to the Chief Officer as soon as practicable. The product supplier should also be informed whenever a faulty product is suspected or identified.

# APPENDICES

# Appendix 1 Responsibilities

Responsibilities of persons involved with close proximity fireworks are detailed in the tables below:

- Table A1.1 Fireworks display host and/or event organiser responsibilities
- Table A1.2 Fireworks contractor and/or operator responsibilities
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- Table A1.5 Responsibilities of persons designing and manufacturing fireworks equipment

*Table A1.1 Fireworks display host and/or event organiser responsibilities*

Fireworks display host and/or event organiser	
Topic	Responsibility
Insurance	Ensure the site venue has an appropriate level of insurance coverage for a fireworks display.
Fireworks contractor and/or operator	Select a suitably qualified and experienced fireworks contractor or operator capable of managing the fireworks display.
Display area	Provide adequate clearance from close proximity fireworks during set-up, before the display is fired, during the display and after, until the display has been cleared by the fireworks operator. Provide adequate directions and signage relating to the close proximity display.
Safety management system	Comply with the agreed practices and procedures.
Post display	Review the overall display using continuous improvement principles.
Incidents	Report any incident and other noteworthy matters to the licensed operator.

*Table A1.2 Fireworks contractor and/or operator responsibilities*

Fireworks contractor and/or operator	
Topic	Responsibility
General	Work in accordance with this code of practice. Take all reasonable and necessary courses of action to ensure that nobody is exposed to unacceptable risk.
Notifications and approvals	If appropriate, notify local community of the display. Notify relevant authorities prior to display, especially DFES. Notify the Department of the display.
Safety and security of site	Select a safe and suitable site for the display appropriate to the types of close proximity fireworks to be used. Ensure security measures (e.g. crowd control measures) for the display are adequate.
Safety management system	In cooperation with other appropriate and competent persons, conduct a risk assessment for the proposed display. Ensure the actions required by the risk assessment are carried out. In cooperation with other appropriate and competent persons, develop an emergency management plan. Provide appropriate emergency and first aid equipment.
Quality and safety of fireworks	Ensure the fireworks are designed, constructed and in a condition that is safe for storage, handling and use. Confirm the performance and reliability of close proximity fireworks prior to the display.

Fireworks contractor and/or operator	
Topic	Responsibility
Conduct of display	Respond appropriately to changing conditions during the display (e.g. stop the display if required).
Post display	Review the overall display using continuous improvement principles.
Incidents	Ensure incidents are reported to the Chief Officer.

Table A1.3 Responsibilities of the fireworks operator's assistant(s)

Fireworks operator's assistant(s)	
Topic	Responsibility
General	Take any reasonable and necessary course of action to ensure no one is exposed to an unacceptable level of risk. Undertake only those activities in which they have been trained and are proficient.
Safety management system	Comply with agreed practices and procedures. Wear suitable PPE.
Incidents	Report any incident and other noteworthy matters to the licensed operator.

Table A1.4 Responsibilities of persons designing and manufacturing close proximity fireworks

Persons responsible for design and manufacture of close proximity fireworks	
Topic	Responsibility
General	Ensure the close proximity fireworks are properly designed and constructed and fit for purpose, including storage, handling and use.
Information	Ensure that appropriate information about the safe storage, handling and use of the fireworks is provided. Technical data sheets and manufacturer's instructions on safe use must be available.
Classification, packaging and marking	Ensure the fireworks are properly classified, packed in approved packages and correctly marked and labelled.

Table A1.5 Responsibilities of persons designing and manufacturing fireworks equipment

Persons responsible for design and manufacture of fireworks equipment	
Topic	Responsibility
General	Ensure the fireworks equipment is designed and constructed, so that when used properly, the risk of harm to people and property from the use of the equipment in combination with pyrotechnic products is at an acceptable level.
Information	Ensure all reasonable steps are taken to ensure that appropriate information about the safe use of the fireworks equipment is available to the user of the equipment, including information about the maintenance necessary for the safe use of the fireworks equipment. It may be appropriate if the information states the use for which the equipment was designed and tested, and any conditions that must be complied with if the equipment is to be used safely (including ongoing inspection and testing requirements and acceptance criteria for continued serviceability).
Quality and testing	Electrical firing equipment should be certified. Equipment should be strong enough to ensure the products are secured safely and cannot become dislodged or disengaged from its intended position.

## Appendix 2 DFES requirements for outdoor fireworks displays, including close proximity fireworks

As part of the notification process to DFES, fireworks operators and pyrotechnic (special use) operators must comply with the following DFES requirements when using close proximity fireworks outdoors:

- The *Bush Fires Act 1954* (the Bushfires Act) and regulations, particularly regulation 39E.
- Fireworks are prohibited when the Minister has declared a total fire ban for the area in which the display is to be held [s. 22 Bushfires Act]. However, exemptions may be granted in certain circumstances.

*Note: Total fire bans may be, or are likely to be, declared when the fire danger rating is classified as very high, severe or extreme. A ban will be declared when the rating is classified as catastrophic.*

- For outdoor close proximity firework displays to be conducted during the period of a total fire ban, the fireworks operator must make separate application for a notice of exemption, which, if granted, will be subject to specific conditions outside of these guidelines.
- For all outdoor displays, the fireworks operator is responsible for providing all the physical and human resources required for both the risks identified in the emergency management plan and for the prevailing fire danger index at the time of the display. The operator is also responsible for ensuring that all applicable standards and regulations are complied with.
- Firefighting appliances must be provided according to the matrix in Table A2.1.
- Each fire fighting vehicle must be crewed by at least two personnel who are trained, as a minimum, in "Introduction to bushfire firefighting" or equivalent.

- Each fire fighting vehicle must:
  - have a water-carrying capacity of at least 500 litres
  - be fitted with at least 20 metres of 19 mm diameter fire hose
  - have a pump capable of delivering 120 litres of water per minute at 700 kPa through an adjustable nozzle having a full spray pattern capable of projecting a six metre jet of water
  - be capable of traversing the area where the display is held, including fallout areas.
- Fireworks operators are responsible for monitoring the fire weather warnings issued by the Bureau of Meteorology, and the status of total fire bans that may be in force or the geographical area of the scheduled display. This information is available on the Bureau of Meteorology and DFES websites.
- One day's notice must always be given to the bush fire control officer for the district, and Department of Biodiversity, Conservation and Attractions (Parks and Wildlife Service) officer if fireworks displays are to occur within 3 km of a Parks and Wildlife estate.
- A close proximity fireworks display notice and copy of the emergency management plan should be supplied to the relevant fire services authority upon request.

*Note: Please consult the local government in the area where the display is to be conducted as restricted and prohibited burning times may vary within Western Australia due to seasonal changes. Should any incident (such as fire) occur during the display, the fireworks operator must contact DFES immediately by telephoning 000.*

Table A2.1 Matrix to determine provision of firefighting appliances

Fire danger index		Fuel tonnage				
		5t/ha	10t/ha	15t/ha	20t/ha	25t/ha
Low/ moderate	0 – 11	1 light tanker	1 light tanker	1 light tanker	1 light tanker	Banned
High	12 – 31	1 light tanker	2 light tankers	1 light tanker	Banned	Banned
Very High	32 – 49	1 light tanker	2 light tankers	Banned	Banned	Banned
Severe	50 – 74	2 light tankers	Banned	Banned	Banned	Banned
Extreme	75 – 99	2 light tankers	Banned	Banned	Banned	Banned
Catastrophic	100+	Banned	Banned	Banned	Banned	Banned

Very high, severe or extreme – total fire ban may be, or is likely to be declared.

No displays permitted due to potentially adverse fire intensity

Catastrophic – total fire ban will be declared

# Appendix 3 Elements to consider in standard operating procedures

Standard operating procedures (SOPs) must be prepared by licensed operators and adopted by all personnel. Table A3.1 describes the main elements,

in a chronological order that should be considered for incorporation in an operator's safety management system.

Table A3.1 Main elements for consideration in standard operating procedures

<b>Venue inspection</b>	Prior to the day of the display, inspect the venue.
Operators should:	
<ul style="list-style-type: none"> <li>• confirm that the site venue owner and occupier approve the intended display</li> <li>• obtain the standard emergency plan for the venue from the display organiser</li> <li>• perform a general risk assessment of the venue, following Section 4.1 Risk management</li> <li>• decide on a layout with appropriate separation to the audience</li> <li>• decide on suitable items to be fired</li> <li>• notify the Department and DFES of any display</li> <li>• confirm indemnity insurance is current and sufficient.</li> </ul>	
<b>Site plan</b>	Prepare a site plan.
Operators should:	
<ul style="list-style-type: none"> <li>• identify structural hazards and include them – to scale – on the site plan</li> <li>• choose a good location for setting up and firing</li> <li>• identify all emergency exits.</li> </ul>	
<b>Indoor venue fire prevention</b>	If automatic fire suppression systems and smoke alarms must be deactivated during the display, submit a formal fire risk assessment to DFES.
Operators should:	
<ul style="list-style-type: none"> <li>• meet the fire prevention requirements of Section 2.3 Licensing, including firefighting equipment</li> <li>• submit a formal fire risk assessment to DFES and liaise with the authority.</li> </ul>	
<b>Outdoor venue fire prevention</b>	Perform a bushfire risk assessment for the venue.
Operators should:	
<ul style="list-style-type: none"> <li>• follow the DFES requirements of Appendix 2 and liaise with DFES if bushfire restrictions apply</li> <li>• be aware of local weather patterns</li> <li>• have appropriate firefighting equipment on standby</li> <li>• exclude combustible materials within five metres of fireworks or at a greater distance if stated by the manufacturer.</li> </ul>	
<b>Emergency plan</b>	Prepare an integrated emergency plan using the venue emergency plan provided by the display or venue organiser.
Operators should ensure that:	
<ul style="list-style-type: none"> <li>• an emergency plan is prepared according to <i>Section 4.1 Risk management</i></li> <li>• evacuation procedures are appropriate for the size of the expected audience</li> <li>• the emergency plan is disseminated to, and understood by, all stakeholders</li> <li>• emergency procedures and equipment are readily available.</li> </ul>	



<b>Transport</b>	Transport fireworks to the venue in a compliant manner.
Operators should ensure that fireworks are transported to the venue:	
<ul style="list-style-type: none"> <li>• in accordance with the Explosives Regulations</li> <li>• by a competent and authorised driver</li> <li>• in a vehicle meeting AEC requirements.</li> </ul>	
<b>Venue arrival</b>	Secure the set-up area on arrival at the venue.
Operators should ensure that:	
<ul style="list-style-type: none"> <li>• the public is separated from the set-up area</li> <li>• the set-up area is secured with a clearly defined border</li> <li>• competent staff are guarding the perimeter.</li> </ul>	
<b>Unload equipment</b>	Unload hardware before the fireworks.
Operators should ensure that the first aid kit and fire extinguishers are unloaded first, followed by relevant tools and securing devices.	
<b>Set up equipment</b>	Once unloaded, set up hardware securely.
Operators should ensure that	
<ul style="list-style-type: none"> <li>• hardware is securely set up in the correct position</li> <li>• outdoor displays may require additional firefighting equipment in accordance with Appendix 2.</li> </ul>	
<b>Unload fireworks</b>	Unload the fireworks.
Operators should ensure that:	
<ul style="list-style-type: none"> <li>• the site remains secure</li> <li>• nobody at the venue is smoking within five metres</li> <li>• all items are in good order and do not appear to be damaged</li> <li>• all items are appropriate for the set-up area</li> <li>• operators are wearing appropriate PPE and natural fibre clothing or certified fire retardant clothing</li> <li>• inventory control is maintained</li> <li>• fireworks are to be secured until required for use.</li> </ul>	
<b>Set up fireworks</b>	Set up fireworks in their correct positions.
Operators should ensure that:	
<ul style="list-style-type: none"> <li>• the prepared layout design is followed</li> <li>• assistants point devices away from themselves and others as much as possible</li> <li>• all wiring is shunted until hook-up</li> <li>• all fireworks are properly secured</li> <li>• assistants are aware of their responsibilities and follow SOPs</li> <li>• all products are set up in accordance with the Explosives Regulations.</li> </ul>	
<b>Remove obstacles</b>	After the fireworks have been set up securely, remove all unnecessary tools, equipment and rubbish.
Operators should ensure that:	
<ul style="list-style-type: none"> <li>• all combustible rubbish is removed</li> <li>• unused fireworks are packaged appropriately and returned to the vehicle or secured in the explosives box</li> <li>• all unnecessary tools are put away, leaving only the equipment needed to initiate the display and fix any faults that may arise during testing.</li> <li>• labelling and marking on explosives packaging is to be obscured before disposal.</li> </ul>	

**Roll out cables**

Connect the cables to the fireworks.

Operators should ensure that cables are:

- shunted
- connected and secured firmly so they do not come loose during the display
- not tangled or wrapped around fireworks
- not a trip hazard.

**Set up firing box**

After the cables have been connected to the fireworks, set up the firing box.

Operators should ensure that:

- they have sole possession of the firing box key
- the firing box switch is in the OFF position
- the firing position has a clear view of the site and its perimeter
- if the perimeter needs to be extended, it is done at this time.

**Circuit testing**

Once the firing position has been set up and the firing box checked, conduct continuity tests on the circuits.

Operators should ensure that:

- all assistants are aware that testing is about to commence
- shunted cables are untwisted and attached correctly to the firing box
- testing is verbally announced followed by a three-second count before turning on the test current
- faults are written down
- the system is turned off and all cables are re-shunted
- faults are corrected
- the above steps are repeated until there are no faults
- once testing is finished, all cables are re-shunted.

**Final moments**

Operators and assistants must be fully alert.

Operators should ensure that:

- the area is still secure
- firing cables are plugged into or connected to the firing box
- a final continuity check is performed (if a fault is present it is too late and the item must be left out of the display)
- for outdoor venues, they are aware of the wind direction and speed, and the effect on the display
- they are aware of the location of fire extinguishers.

**Display time**

Operators and assistants must be in control of the display.

Operators should ensure that:

- they are aware of the location of their assistants and the fireworks
- they are aware of the position of the audience
- fireworks are initiated properly and deliberately
- initiation follows the planned firing order
- any misfires are noted for handling later
- in the case of an incident, the display is stopped and problem corrected
- in the case of a potential incident, the display is stopped and problem corrected
- in the case of an unexpected fire, the display is stopped and assistants are sent to fight the fire
- if there is a fire that cannot be controlled, the emergency plan is activated
- in the case of a security breach, firing is stopped until the problem is corrected.

<b>Cooling off</b>	An adequate cooling-off period is to be considered.
Operators should ensure that:	
<ul style="list-style-type: none"> <li>• the cooling-off period is adhered to</li> <li>• operators are sent to check for any misfires</li> <li>• the area is kept secure.</li> </ul>	
<b>Check for misfires</b>	Check for misfires.
Operators should ensure that:	
<ul style="list-style-type: none"> <li>• PPE is worn when handling misfires</li> <li>• a check is carried out for misfires</li> <li>• misfires are handled in accordance with manufacturer's recommendations and the contractor's or operator's safety management system.</li> </ul>	
<b>Clean-up</b>	Clean up the area.
Operators should ensure that	
<ul style="list-style-type: none"> <li>• all equipment is packed away, and all rubbish is removed from the venue and surrounding areas.</li> <li>• unfired pieces or misfires must be handled in accordance with the safety management system (or in a safe manner as for misfires).</li> </ul>	
<b>Post display</b>	Report and investigate any accidents, and follow up on minor irregularities.
Operators should ensure that any accidents are reported to the Chief Officer and investigated, and assistants are debriefed following any minor irregularities.	

## Appendix 4 Disposal of unwanted close proximity fireworks

Unwanted close proximity fireworks include:

- malfunctioning batches of fireworks found during testing or during firing at a display
- fireworks exceeding their shelf life or that are damaged
- misfires and unused product left over from displays
- abandoned close proximity fireworks discovered on public land.

Close proximity fireworks require safe disposal so that they no longer pose a risk. They must not be thrown into rubbish bins for disposal.

Manufacturer's instructions should be followed when disposing of close proximity fireworks. Safety data sheets (SDS) and technical data sheets (TDS) details should be available from the manufacturer or supplier. If this information is not available, the supplier of the fireworks should be contacted for disposal advice.

After a display, the licensed operator may store unwanted close proximity fireworks at their residence (permitted quantities listed in Table 3.1) before taking them elsewhere for disposal at the earliest opportunity.

The quantity and types of fireworks destroyed must be recorded for stock reconciliation purposes.









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