

# New Zealand Police Shooting Range Manual

For the safe design, construction and operation of shooting ranges containing the Commissioner's safety standards in accordance with Section 380 of the Arms Act 1983

# **CERTIFIED** SHOOTING RANGE

ſe Tari Pūreke – Firearms Safety Authority, a business unit of New Zealand Police

.5 DECEMBER 2022



Design by icondesign.co.nz



#### About this manual

- 1 Shooting ranges provide a safe place for the use of firearms for target shooting in a controlled environment. Operators of shooting ranges have new legal obligations under an approval framework established in 2022 through changes to the Arms Act 1983 and the Arms Regulations 1992.
- 2. This manual helps shooting range operators manage the design, construction and operation of a range in a safe way. It also helps them meet obligations under the Arms Act and Arms Regulations. It is a document about what range operators need to do and how to do it and contains the safety standards published by the Commissioner in accordance with Section 380 of the Arms Act 1983.
- 3 Many organisations and individuals have helped with the preparation of this manual, and their contributions are noted in section 9.
- 4. This version of the New Zealand Police shooting range manual dated 15 December 2022 is approved by:
  - Inspector Peter (PGR) Baird Manager National Compliance and Resolutions Te Tari Pūreke – Firearms Safety Authority Acting under delegated authority of the Commissioner of Police
- 5. In this manual requirements or standards are indicated with mandatory language such as 'must' and 'is/are to'. These constitute required safety standards in terms of Section 380 of the Arms Act 1983. A shooting range operator must also comply with all relevant provisions in the Arms Act 1983 and Arms Regulations 1992.
- 6. Examples of how to comply with the requirements, or recommendations for good practice, are indicated with nonmandatory language such as 'may', 'should' or 'could'.

# Table of Contents



PAGE		PAGE		
1	Preface	18	Additional inspections	
2	Contents	19	Conditions that may affect shooting range certification	
4	Glossary of terms	21	Section 3 - Safe design and construction of a shooting range	
6	Figures and tables	21	Safe design and construction of a shooting range	
7	Abbreviations	21	Shooting range design guidance	
9	Section 1 - Introduction	21	Shooting range design and construction techniques	
9	Shooting ranges	21	Generic shooting range design	
9	Sighting-in that is not done on a range	21	Pistol/rifle shooting ranges	
9	Shooting range operator	23	Gallery range	
10	Officer on duty	24	Baffled range	
10	Certification	25	Skeet and trapshooting range	
10	Types of ranges	25	Sporting clay range	
10	Established shooting ranges	26	Indoor shooting range	
11	One-time use shooting ranges	27	Field shooting range	
13	Section 2 - Shooting range certification	27	Black powder shooting range	
13	Shooting ranges must be certified	29	Section 4 - Components of shooting range	
13	Phase-in period		design and construction	
13	Applying for certification	29	Cone of fire	
13	The application form	29	Range design cone of fire	
13 14	The application form Supporting information	29 29	Range design cone of fire Inability of a shooter to achieve and maintain the cone of fire	
13 14 14	The application form Supporting information Multiple ranges on one site	29 29 30	Range design cone of fire Inability of a shooter to achieve and maintain the cone of fire Projectile velocity	
13 14 14 14	The application form Supporting information Multiple ranges on one site Additional information	29 29 30 32	Range design cone of fire Inability of a shooter to achieve and maintain the cone of fire Projectile velocity Environmental planning considerations	
13 14 14 14 14	The application form Supporting information Multiple ranges on one site Additional information Making the application	29 29 30 32 32	Range design cone of fire Inability of a shooter to achieve and maintain the cone of fire Projectile velocity Environmental planning considerations Landowner permissions (including the range danger area)	
13 14 14 14 14 14	The application form Supporting information Multiple ranges on one site Additional information Making the application Paying fees	29 29 30 32 32 32	Range design cone of fire Inability of a shooter to achieve and maintain the cone of fire Projectile velocity Environmental planning considerations Landowner permissions (including the range danger area) Air danger height and airspace considerations	
13 14 14 14 14 14 15	The application form Supporting information Multiple ranges on one site Additional information Making the application Paying fees Deciding whether or not to certify a range	29 29 30 32 32 32 32	Range design cone of fire Inability of a shooter to achieve and maintain the cone of fire Projectile velocity Environmental planning considerations Landowner permissions (including the range danger area) Air danger height and airspace considerations Airspace intrusion	
13 14 14 14 14 14 15 15	The application form Supporting information Multiple ranges on one site Additional information Making the application Paying fees Deciding whether or not to certify a range Certification	29 29 30 32 32 32 32 32 32	Range design cone of fireInability of a shooter to achieve and maintain the cone of fireProjectile velocityEnvironmental planning considerationsLandowner permissions (including the range danger area)Air danger height and airspace considerationsAirspace intrusionUseful links	
13 14 14 14 14 15 15	The application form Supporting information Multiple ranges on one site Additional information Making the application Paying fees Deciding whether or not to certify a range Certification Renewal of range certification	29 29 30 32 32 32 32 32 32 33	Range design cone of fireInability of a shooter to achieve and maintain the cone of fireProjectile velocityEnvironmental planning considerationsLandowner permissions (including the range danger area)Air danger height and airspace considerationsAirspace intrusionUseful linksRange axis (direction of fire)	
13 14 14 14 14 15 15 15	The application form Supporting information Multiple ranges on one site Additional information Making the application Paying fees Deciding whether or not to certify a range Certification Renewal of range certification Conditions of certification	<ol> <li>29</li> <li>29</li> <li>30</li> <li>32</li> <li>32</li> <li>32</li> <li>32</li> <li>32</li> <li>33</li> <li>33</li> </ol>	Range design cone of fireInability of a shooter to achieve and maintain the cone of fireProjectile velocityEnvironmental planning considerationsLandowner permissions (including the range danger area)Air danger height and airspace considerationsAirspace intrusionUseful linksRange axis (direction of fire)Backstops	
13 14 14 14 14 15 15 15 15	The application form Supporting information Multiple ranges on one site Additional information Making the application Paying fees Deciding whether or not to certify a range Certification Renewal of range certification Conditions of certification Steps for making an application for certification	<ol> <li>29</li> <li>29</li> <li>30</li> <li>32</li> <li>32</li> <li>32</li> <li>32</li> <li>33</li> <li>33</li> <li>34</li> </ol>	Range design cone of fireInability of a shooter to achieve and maintain the cone of fireProjectile velocityEnvironmental planning considerationsLandowner permissions (including the range danger area)Air danger height and airspace considerationsAirspace intrusionUseful linksRange axis (direction of fire)BackstopsBackstop dimensions	
13 14 14 14 14 15 15 15 15 16 18	The application formSupporting informationMultiple ranges on one siteAdditional informationMaking the applicationPaying feesDeciding whether or not to certify a rangeCertificationRenewal of range certificationConditions of certificationSteps for making an application for certificationRange inspection for certification	<ul> <li>29</li> <li>29</li> <li>30</li> <li>32</li> <li>32</li> <li>32</li> <li>32</li> <li>33</li> <li>34</li> <li>34</li> </ul>	Range design cone of fireInability of a shooter to achieve and maintain the cone of fireProjectile velocityEnvironmental planning considerationsLandowner permissions (including the range danger area)Air danger height and airspace considerationsAirspace intrusionUseful linksRange axis (direction of fire)BackstopsBackstop dimensionsTopographic features used to establish reduced	
13 14 14 14 14 15 15 15 15 16 18 18	The application formSupporting informationMultiple ranges on one siteAdditional informationMaking the applicationPaying feesDeciding whether or not to certify a rangeCertificationRenewal of range certificationConditions of certificationSteps for making an application for certificationRange inspection for certificationShooting range inspection checklist	<ol> <li>29</li> <li>29</li> <li>30</li> <li>32</li> <li>32</li> <li>32</li> <li>32</li> <li>32</li> <li>33</li> <li>34</li> <li>34</li> </ol>	Range design cone of fireInability of a shooter to achieve and maintain the cone of fireProjectile velocityEnvironmental planning considerationsLandowner permissions (including the range danger area)Air danger height and airspace considerationsAirspace intrusionUseful linksRange axis (direction of fire)BackstopsBackstop dimensionsTopographic features used to establish reduced range danger areas	
13 14 14 14 14 15 15 15 15 16 18 18	The application formSupporting informationMultiple ranges on one siteAdditional informationMaking the applicationPaying feesDeciding whether or not to certify a rangeCertificationRenewal of range certificationConditions of certificationSteps for making an application for certificationRange inspection checklistShooting range inspection report	<ol> <li>29</li> <li>29</li> <li>30</li> <li>32</li> <li>32</li> <li>32</li> <li>32</li> <li>32</li> <li>33</li> <li>34</li> <li>34</li> </ol>	Range design cone of fireInability of a shooter to achieve and maintain the cone of fireProjectile velocityEnvironmental planning considerationsLandowner permissions (including the range danger area)Air danger height and airspace considerationsAirspace intrusionUseful linksRange axis (direction of fire)BackstopsBackstop dimensionsTopographic features used to establish reduced range danger areasBullet catchers	
13 14 14 14 15 15 15 15 16 18 18 18 18	The application form Supporting information Multiple ranges on one site Additional information Making the application Paying fees Deciding whether or not to certify a range Certification Renewal of range certification Conditions of certification Steps for making an application for certification Range inspection for certification Shooting range inspection report Forms	<ol> <li>29</li> <li>29</li> <li>30</li> <li>32</li> <li>32</li> <li>32</li> <li>32</li> <li>32</li> <li>33</li> <li>34</li> <li>34</li> <li>36</li> </ol>	Range design cone of fireInability of a shooter to achieve and maintain the cone of fireProjectile velocityEnvironmental planning considerationsLandowner permissions (including the range danger area)Air danger height and airspace considerationsAirspace intrusionUseful linksRange axis (direction of fire)BackstopsBackstop dimensionsTopographic features used to establish reduced range danger areasBullet catchersBullet catchers	

- PAGE
- 37 Mobile bullet catchers (for low velocity ammunition only)
- 37 Side berms and side walls
- 38 Side backstops (for low velocity ammunition only)
- 38 Range floor
- **38** Baffles and protective cladding
- **39** Firing points and firing lines
- **39** Firer position spacing
- 39 Firing line height (elevation)
- 40 Firing line depth
- 40 Covered firing line
- 40 Target centre height
- 40 Targets
- 40 Moving targets
- 40 Steel targets
- 41 Steel target shrouds
- 43 Section 5 Shooting range danger areas signage and flags
- 43 Danger area definition
- 43 Shooting range danger area
- **43** Effect of significant topographic features on shooting range danger areas
- 43 Full danger area range
- **43** Cone of fire is not captured by an artificial structure or topographic feature
- **46** Cone of fire is captured by an artificial structure or topographic feature
- 46 Reduced danger area range
- 48 Managing pop-over
- 48 No danger area range
- 48 Control of access to the range and danger area
- 48 Impact surfaces
- 49 Effect of trees in shooting range danger areas
- 49 Activity inside a shooting range danger area managing the risk
- 49 Determining a shooting range danger area
- 49 Reduction in dimensions of shooting range danger areas
- **49** Design, construction and application of an ammunition danger area template
- 52 Ammunition danger area design explanation

#### PAGE

- 56 Application of an ammunition danger area template
- 58 Shooting range signage
- 58 Shooting range entrance signage
- 58 Shooting range danger area signs
- 58 Alternatives to range danger area signs
- 58 Range in use flags
- **59** Alternative range in use flag requirements
- 59 Wind flags
- 61 Section 6 Range standing orders
- 61 Introduction
- 61 Responsibility for range standing orders
- 61 Risk assessment
- 61 Notification to Police
- 61 Notification to all range users
- 61 Inability of a shooter to achieve and maintain cone of fire
- 61 Test firing
- 62 Eye and hearing protection
- 62 One-time use shooting ranges
- 62 Range standing orders contents
- 64 Individual shooting range summary sheet
- 64 Range standing orders standard headings
- 67 Section 7 Shooting range closure
- 67 Shooting range closure
- 67 Temporary closure
- 68 Permanent closure
- 68 Decommissioning
- 71 Section 8 Sighting-in that is not done on a range
- 71 Sighting-in
- 71 Safety considerations
- 73 Section 9 References and acknowledgments
- 73 References
- 73 Acknowledgments
- 74 Range Certification Engagement Group
- 74 Useful links

#### GLOSSARY

Active range area	The area in which shooting activity is conducted on a range, including the danger area applied to the range.
Angle of departure (Quadrant elevation)	The angle formed between a horizontal line and the centreline of the bore at the moment the projectile leaves the muzzle of the firearm. Angle of departure is also known as quadrant elevation (QE) and is used in the design of an ammunition danger area template.
Angular measurement	Angular measurement used in this manual are: 1. 360 degrees = 6400 NATO mils. 2. 1 degree = 17.77778 NATO mils. 3. 1 NATO mil = 0.05625 degrees.
Azimuth	The horizontal angular measurement of a bearing from true (or grid) north.
Backsplash	Backsplash is defined as projectile fragments, target materials, or ground debris, thrown back towards the shooter as a result of projectile impact.
Bearing	A direction measured as the angle between the north line and a direction-of-travel. The angle is measured clockwise from the north line.
Calibre	The diameter of a firearm bore measured across the lands (excluding the depth of the rifling grooves) and the diameter of a projectile.
Contour	An imaginary line on the surface of the ground at the same height above mean sea level (AMSL) throughout its length. Contour lines are drawn on maps to show the shape of the ground.
Deterministic safety analysis	A traditional approach for developing an ammunition danger area applied to a range. It requires the calculation of a combination of predetermined factors to create a generic danger area. The ammunition danger area is applied from every firing position to every target position to calculate the overall range danger area.
Deterministic safety analysis GPS	A traditional approach for developing an ammunition danger area applied to a range. It requires the calculation of a combination of predetermined factors to create a generic danger area. The ammunition danger area is applied from every firing position to every target position to calculate the overall range danger area. Global position system receivers obtain signals from satellites and use them to determine your position.
Deterministic safety analysis GPS Grid north	A traditional approach for developing an ammunition danger area applied to a range. It requires the calculation of a combination of predetermined factors to create a generic danger area. The ammunition danger area is applied from every firing position to every target position to calculate the overall range danger area. Global position system receivers obtain signals from satellites and use them to determine your position. The direction of the vertical lines on a topographic map and is used when measuring bearings on a map. On New Zealand maps, the difference between grid north and true north varies between -4° and 4°, depending on where in the country you are.
Deterministic safety analysis GPS Grid north High velocity	A traditional approach for developing an ammunition danger area applied to a range. It requires the calculation of a combination of predetermined factors to create a generic danger area. The ammunition danger area is applied from every firing position to every target position to calculate the overall range danger area. Global position system receivers obtain signals from satellites and use them to determine your position. The direction of the vertical lines on a topographic map and is used when measuring bearings on a map. On New Zealand maps, the difference between grid north and true north varies between -4° and 4°, depending on where in the country you are. High velocity is ammunition that leaves the firearm at 2,000 feet per second (fps) or greater.
Deterministic safety analysis GPS Grid north High velocity Impact surfaces	A traditional approach for developing an ammunition danger area applied to a range. It requires the calculation of a combination of predetermined factors to create a generic danger area. The ammunition danger area is applied from every firing position to every target position to calculate the overall range danger area. Global position system receivers obtain signals from satellites and use them to determine your position. The direction of the vertical lines on a topographic map and is used when measuring bearings on a map. On New Zealand maps, the difference between grid north and true north varies between -4° and 4°, depending on where in the country you are. High velocity is ammunition that leaves the firearm at 2,000 feet per second (fps) or greater. Impact surfaces are all surfaces within the cone of fire that are likely to be struck. Impact surfaces are categorised as: 1. Hard impact surfaces, which are all surfaces other than hard impact surfaces. 2. Ground impact surfaces, which are all surfaces other than hard impact surfaces. The composition and depth of the ground (including topsoil and vegetation) in some regions may allow for the ricochet angle to be reduced if it is deemed safe to do so by the shooting range operator.
Deterministic safety analysis GPS Grid north High velocity Impact surfaces Latitude	A traditional approach for developing an ammunition danger area applied to a range. It requires the calculation of a combination of predetermined factors to create a generic danger area. The ammunition danger area is applied from every firing position to every target position to calculate the overall range danger area. Global position system receivers obtain signals from satellites and use them to determine your position. The direction of the vertical lines on a topographic map and is used when measuring bearings on a map. On New Zealand maps, the difference between grid north and true north varies between -4° and 4°, depending on where in the country you are. High velocity is ammunition that leaves the firearm at 2,000 feet per second (fps) or greater. Impact surfaces are all surfaces within the cone of fire that are likely to be struck. Impact surfaces are categorised as:     Hard impact surfaces, which are all surfaces other than hard impact surfaces. Ground impact surfaces, which are all surfaces other than hard impact surfaces. The composition and depth of the ground (including topsoil and vegetation) in some regions may allow for the ricochet angle to be reduced if it is deemed safe to do so by the shooting range operator.

Longitude	The east/west measurement of position in relation to the prime meridian at Greenwich (longitude zero).
Low velocity	In relation to a projectile, one that leaves the firearm at less than 2,000 feet per second (fps).
Magnetic north	The direction in which a magnetic compass needle points. This is towards the magnetic North Pole, which is in northern Canada.
Magnetic variation	In New Zealand, magnetic north is between 18° and 25° east of grid north. The difference is the magnetic declination, commonly called the magnetic variation, and is also known on maps as the grid–magnetic angle or G–M angle. The magnetic variation in a particular area can be found in the explanatory information in the border of the map for that area.
Mantlet	A range structure on a gallery range that is designed to capture the bottom of the cone of fire.
NZTM GR	New Zealand Transverse Mercator Grid Reference mapping system.
Officer on duty	A person who holds a firearms licence and has received appropriate training in shooting range safety management. May also be a range officer.
Overshoot projectiles	An overshoot is defined as a projectile that carries over or beyond a backstop. By definition, an overshoot projectile will not have struck any downrange object before traveling beyond the backstop. Overshoots are distinctly different from ricochets.
Orientating or setting a map	Placing a map so that its north line points to magnetic or grid north. Also used for air photographs.
Plotting	The process of transferring field observations and measurements to a map or sketch.
Probabilistic safety analysis	Requires the collection and input of data within a probabilistic safety analysis software program recognised by Police. Danger areas calculated are specific to a range and may be smaller than those generated by deterministic safety analysis.
Range axis (Direction of fire)	The primary bearing from which all range design geometry is derived.
Ricochet	A ricochet is the change of direction and velocity induced in a projectile or fragment caused by its impact with a material. For high velocity (at least 2,000 fps) ammunition could ricochet from 30 degrees off ground impact surfaces and 45 degrees off hard impact surfaces. For low velocity (less than 2,000 fps) ammunition could ricochet from 15 degrees off ground impact surfaces and 45 degrees off hard impact surfaces. It is accepted that high velocity ammunition fired over long distances will reduce to low velocity and a low velocity ricochet could occur off the respective impact surface as described above.
Shooting range inspector	A person trained as a shooting range inspector and recognised by Police as competent to prepare the range inspection report required as part of an application for a range to be certified.
Shooting range operator	The person in whose name the application for range certification is made. They have legal responsibilities for the safe design, construction and operation of the range.
Total energy distance	The maximum distance a projectile will travel in a particular direction if it is not restricted.
True north	The direction towards the earth's geographic North Pole. This never changes.

#### FIGURES AND TABLES

FIGURE	TITLE	PAGE
1.1	Process flowchart – establishing a shooting range	11
3.1	Examples of rifle ranges	22
3.2	Examples of pistol ranges	22
3.3	Examples of gallery ranges	23
3.4	Examples of baffled ranges	24
3.5	Example of skeet ranges	25
3.6	Example of a down the line (DTL) trap (field ) range	25
3.7	Example of a sporting clay shooting range (without a shooting stall)	25
3.8	Example of indoor ranges	26
3.9	Example of field shooting ranges	27
3.10	Example of black powder shooting ranges	27
4.1	Example of a cone of fire around point of aim and target centre height dimension	30
4.2	Backstop designed to capture cone of fire and range floor strike from first point of impact (FPI) and resultant ricochet	33
4.3	Backstop slope angle	34
4.4	Bullet catcher construction dimensions	36
5.1	Range danger area decision flowchart	44
5.2	Cone of fire captured by a topographic feature with a slope greater than 56 deg	46
5.3	Cone of fire captured by a topographic feature	46
5.4	Manual application of an ADAT to produce a scale diagram of the range danger area. The land boundary in indicated in green and the reduced danger applied in red	47
5.5	Electronic application of an ADAT to produce a scale diagram of the range danger are using the Microsoft PowerPoint software application	47
5.6	Example plan view of pop-over dimensions	48
5.7	Process flowchart – determining a shooting range danger area	51
5.8	Example of the components of an ammunition danger area template	52
5.9	1:25,000 T1 - T2 - T3 -T4 Templates (Not to scale)	53
5.10	1:25,000 T5 - T6 Templates (Not to scale)	54
5.11	1:25,000 T7 - T8 Templates (Not to scale)	55
5.12	Example NZCTA Shotgun skeet range template	56
5.13	Example NZCTA Shotgun trap range template	56
5.14	Example of template design for an established range	57
5.15	Example of template design for field shooting	57
5.16	Example application of an ammunition danger area template from a firing box using parallel bearings with a maximum left and right of arc applied	57
5.17	Example of a completed firing box using parallel bearings with maximum left and right of arcs	57
6.1	Example of RSOs individual range summary sheet	64

TABLE	TITLE	PAGE
2.1	Overview of the application process for shooting range certification	16 - 17
4.1	Range design cones of fire	31
4.2	Examples of backstop dimensions	35
4.3	Examples of bullet catcher maximum muzzle velocity or muzzle energy	36
4.4	Bullet catcher dimensions - low velocity	37
4.5	Bullet catcher dimensions - high velocity	37
4.6	Minimum thickness of construction materials	39
4.7	Steel protective plating for ranges	39
5.1	Ammunition danger area template dimensions	45
6.1	Range standing orders - standard headings	65
9.1	Range certification engagement group	74

#### ABBREVIATIONS

ADH	Air danger height	OD	Officer on duty
ADAT	Ammunition danger area template	RCEG	Range Certification Engagement Group
CAA	Civil Aviation Authority	SRI	Shooting range inspector
CofF	Cone of fire	SRO	Shooting range operator
FDA	Full danger area	QE	Quadrant elevation
GB	Grid bearing	RDA	Reduced danger area
GR	Grid reference	RO	Range officer
h/w	Hard wood	RSOs	Range standing orders
mils	NATO mils (angle of military measurement)	s/w	Soft wood
NDA	No danger area	тсн	Target centre height



# Section

Target Line

Range Floor

### Section 1 Introduction



#### Shooting ranges

- 1.1 All shooting ranges must be designed, built and operated safely. To ensure this, a shooting range must be certified by Police before it operates. It is an offence to operate a shooting range that is not certified.
- 1.2 A shooting range is an outdoor or indoor facility, or a designated area of land, that is used either by a shooting club or members of the public for the primary purpose of carrying out shooting activities. In this context shooting activities means using a firearm or an airgun to shoot at fixed or moving targets that are not living. Paintball shooting and airsoft shooting are not included in shooting activities.
- 1.3 Any defence area that is used by a shooting club for shooting activities is also a shooting range that must be certified.

#### Sighting-in that is not done on a range

- 1.4 Sighting-in is the term used when shooting a firearm to confirm its accuracy and that the sighting system is aligned and correctly adjusted to the shooter (sometimes referred to as 'zeroing'). It is commonly done where the accuracy of the firearm is in question or the shooter is required to confirm their zero, such as before target shooting at a range, prior to a hunting trip or pre-duckshooting season. However, sighting-in can be done safely at any time when the accuracy of the firearm is in doubt.
- 1.5 Sighting-in should be done on a range, but it can still be done safely when a range is not available. Refer to section 8 for guidance on how to safely carry out sighting-in when not on a range.

#### Shooting range operator

- 1.6 The shooting range operator is the person in whose name the application for certification is made. They have legal responsibilities for the safe design, construction and operation of the range.
- 1.7 The operator of a range may be an individual person, a body corporate such as a company or incorporated society, or something else such as a trust or a shooting club that isn't an incorporated society.
- 1.8 The shooting range operator is responsible for the operation of their shooting range(s) including compliance with:
  - a. The Arms Act 1983 and associated regulations, e.g. Arms Regulations 1992,
  - b. The requirements of this manual,
  - c. The conditions the range certification is subject to,
  - d. The remedial or preventative actions required by an improvement notice (see paragraph 2.31), and
  - e. The requirements for renewal of the range certification.

This range manual provides the New Zealand sport and target shooting community and members of the New Zealand public with requirements for the safe design, construction and operation of shooting ranges.



!

All ranges must be designed, constructed, operated and maintained to ensure the safety of both participants and non-participants at the shooting activity

- 1.9 A shooting range operator of a certified shooting range must maintain for each year ending 30 June a record of the officers who are on duty at the shooting range from time to time during the year, who holds a firearms licence, and is appropriately trained in shooting range safety management. The record must be retained for two years after the end of the year to which the record relates.
- 1.10 A shooting range operator must maintain an up-to-date record, in hard copy or electronic form, of any incidents or safety breaches that have occurred on any shooting range operated by the range operator and that did not result in injury to, or the death of, any person but had the potential to do so. Each entry in the record must be kept for at least 5 years from the date on which the incident or safety breach occurred. However, a range operator need not comply with this regulation if, in accordance with any regulations made for the purpose, the range operator provides information about each entry in the record to the Police for inclusion in the registry.

#### Officer on duty

- 1.11 A range certificate is granted subject to the condition that, at all times while the certified shooting range is in use, an officer is on duty who:
  - a. Holds a firearms licence, and
  - b. Is appropriately trained in shooting range safety management.
- 1.12 Shooting range safety management training must cover the duties and responsibilities of the officer on duty which include:
  - Understanding and compliance with range standing orders,
  - The correct preparation and set up of the range before firing begins, including clearance of the danger area,
  - c. That only approved firearms, calibres and ammunition are used on the range,
  - That they supervise all shooters and inspect firearms and ammunition in accordance with the respective shooting discipline requirements, e.g. specific range safety procedures, match/competition rules,
  - e. That only approved targets are used, and target placement is correct,
  - f. The control and supervision of firearms security and safe firearms handling within the range environment,
  - g. That they assign shooters to targets,
  - The safe conduct of the shooting activity using appropriate range commands (for the respective shooting discipline) and clearance of firearms,
  - i. That they report any incidents of safety breachers (including breachers of range standing orders) to the shooting range operator.

- j. The appropriate control of all non-firing participants while firing is in progress, and
- k. The procedure to follow in an emergency.
- 1.13 When there are one or more shooters on the range, one of these must be designated as the officer on duty. The officer on duty can fulfil their role as described in paragraph 1.12 above and participate as a shooter, provided they ensure that they can always maintain control of the range.
- 1.14 Some national shooting organisations provide training for their members to be a range officer or range safety officer for their specific shooting discipline. The training must include the officer on duty training requirements listed in paragraph 1.12 if that person is to act as an officer on duty. It is a condition of operating the range that an officer on duty must be on duty for each range in use.

#### Certification

1.15 All shooting ranges must be certified by Police. Section 2 sets out the process for obtaining certification for a shooting range.

#### Types of ranges

- 1.16 Shooting ranges are set up for a specific shooting discipline or disciplines and are likely to be used regularly. They can be located on public or private land and may have infrastructure to support the type of shooting activity undertaken, such as a markers gallery, firing positions, shooting stalls, storage facilities and clubrooms. There are two types of shooting ranges:
  - a. Established shooting ranges, and
  - b. One-time use shooting ranges.

#### Established shooting ranges

1.17 Established shooting ranges are purpose-built for a specific type of shooting activity and are used on a regular basis. This type of shooting range can be designed and constructed to cater for multiple shooting disciplines to be fired on the same range, e.g. rifles, pistols and shotguns. They can be located on public or private land and may have infrastructure to support their respective shooting activity, e.g. clubrooms, toilets, shelters, markers gallery, firing positions, shooting stalls, storage facilities.

- 1.18 Examples of established shooting ranges:
  - a. Pistol/rifle shooting ranges,
  - b Gallery ranges,
  - c. Baffled ranges,
  - d. Skeet and trapshooting ranges,
  - e. Sporting clay ranges,
  - f. Field shooting ranges with recurring events, and
  - g. Indoor shooting ranges.

#### One-time use shooting ranges

1.19 Some ranges are used only on one occasion for a period of no more than several days, such as for a shooting competition. One-time use ranges are still required to be certified by Police but that certification will be cancelled once the range use is completed. This type of range is unlikely to have any fixed infrastructure, e.g. flagpole's, shelter, buildings etc.



#### Process Flowchart – Establishing a Shooting Range

**Note:** The aim of this process chart is to provide the reader with an insight into the type of procedures that may need to be completed when establishing a new shooting range. For more detailed information and advice, it is recommended that the reader make contact with a National Shooting Organisation relevant to the shooting discipline they wish to establish. It is also recommended that the reader review the source documents listed in section 9 for specific detail on safe design and construction of shooting ranges.



# Section

BERETTA

Range Danger Area

Trap House

# Section 2 Shooting range certification



#### Shooting ranges must be certified

- 2.1 A shooting range must be certified by Police before it is operated. It is an offence to operate a shooting range that is not certified.
- 2.2 A shooting range is an outdoor or indoor facility, or is a designated area of land used either by a shooting club or members of the public for the primary purpose of shooting activities. Shooting activities means using a firearm or airgun to shoot at fixed or moving non-living targets.
- 2.3 An area of land or a facility is not a shooting range if it is used:
  - a. For paintball or airsoft shooting, or
  - b. Occasionally for sighting-in firearms by an individual or a group of individuals who aren't a shooting club.

#### **Phase-in period**

- 2.4 There is a phase-in (or transitional) period for the new certification requirements:
  - Any pistol range that was approved by Police on 24 June 2022 may continue to operate. The range is treated as if it holds a certificate issued on that date, which lasts for five years unless it is cancelled or surrendered earlier.
  - b. Any other shooting range that was in operation on 24 June 2022 may continue to operate provided an application for certification is submitted to Police before 24 June 2023. Once the application is made the range can continue operation until Police make a decision on the application. If its application is declined the range's operations must immediately stop.
  - c. If a shooting range was not operating on 24 June 2022, it must not start operating until there is an application for certification and Police grant that application and issue a range certificate.

#### Applying for certification

- 2.5 An application to have a range certified must be made by:
  - a. The shooting range operator if that is an individual person, or
  - b. Someone authorised to apply on behalf of a shooting range operator who is not an *individual person*, for instance if the shooting range operator is a body corporate (e.g. company or incorporated society) or

something else (e.g. a trust or a shooting club that is not an incorporated society). You will need evidence of that authorisation.

#### The application form

- 2.6 If you are applying for a shooting range to be certified, you must complete the application form with this information:
  - a. Your name and contact details: physical address, telephone number and e-mail address if you have one.
  - b. The name and contact details of the shooting range operator, if you are applying on their behalf.
  - c. The firearms licence number of the shooting range operator if an individual who holds a firearms licence, otherwise their driver licence number.
  - d. The name and address of the shooting range, and the New Zealand Topographic map number and coordinates of its location.
  - e. The name and contact details of an alternative contact person who Police can contact about the range and its operations. This person is most likely to be the range operator or manager but doesn't have to be. They must be 18 years or older and reside in New Zealand.
  - f. The range operator's New Zealand Business Number if it has one.
  - g. The types of firearms and maximum calibre to be used on the range.
  - h. Confirmation if firearms and/or ammunition will be stored at the range
  - i. For a one-time use range, the date or dates it will be used.
  - j. Any other information asked for on the form.
  - k. You must make a declaration on the form that:
    - All landowners affected by the operation of the range, or who are likely to be affected, have given their consent to the range's operation.
    - (2) All necessary consents for the range have been obtained from the relevant territorial authority (local council) and regional council. Existing ranges may already be operating under existing consents and may or may not need additional territorial authority or regional council approvals

- (3) All the information provided in the application is true and correct.
- I. If the form is submitted electronically there is no need to sign it. If the form is printed and a hard copy submitted then you must sign the form.

#### Supporting information

- 2.7 You must include with the application:
  - a. A copy of the range standing orders for the shooting range.
  - A copy of the inspection report for the range prepared by a shooting range inspector recognised by Police.
  - c. Evidence that you are authorised to make the application if you are not the shooting range operator. This is likely to be a letter or a copy of the minutes of a meeting that authorised you.

#### Multiple ranges on one site

- 2.8 It is possible to apply for certification of multiple shooting ranges on the same site if they are operated by the same shooting range operator by using the application for shooting range certification form.
- 2.9 You must include with the application a copy of the range standing orders and an inspection report for each range.

#### Additional information

2.10 You may include other information if you think it would be useful to Police in making a decision on whether to certify the range.

#### Making the application

- 2.11 You can make the application by email or in hard copy. Either:
  - a. scan and send the completed form to the <u>upload</u> <u>page</u> on the Police website, along with electronic copies of the supporting information (Note: if submitting online, file types must be jpg, jpeg, png or pdf and each file size must not exceed 5MB), or
  - post hard copies of the application form and the supporting information to: Clubs and Ranges Team, Te Tari Pūreke – Firearms Safety Authority, DX PX10012, Palmerston North.

#### Paying fees

- 2.12 Police will send you an invoice after receiving your application. Once this is paid Police can start processing the application.
- 2.13 The application fee depends on the type and number of ranges on the site:
  - a. Single shooting range on a site; \$400
  - Multiple shooting ranges on the same site operated by the same range operator; \$400 plus \$45 for each additional range up to a maximum of \$625, and no increase with additional ranges beyond a total of six ranges
  - c. Clay target shooting range (skeet, trap, sporting); \$400
  - d One-time use range; \$250
  - e. All fees include GST of 15%.



#### Deciding whether or not to certify a range

- 2.14 Police will review the information provided and may ask you for any additional information it needs for making a decision. Police may also seek information from other sources.
- 2.15 Police will inspect the range premises and storage facilities if any firearms or ammunition, or both, will be stored on the premises of the shooting range.
- 2.16 Before certifying a range, Police must be satisfied that:
  - It meets all required safety standards published by Police
  - b. All necessary consents have been obtained.
- 2.17 This manual contains the standards against which applications will be assessed. Mandatory requirements are indicated by the use of 'must', while advice and examples of good practice are indicated by language such as 'should'.

#### Certification

- 2.18 If Police grant an application for certification, it will issue a certificate as evidence of that decision.
- 2.19 The certificate remains in force for 5 years, unless the shooting range operator surrenders it, or Police cancels it.

#### Renewal of range certification

2.20 The range certificate may be renewed on one or more occasions. The process for renewals is usually the same as for making an initial application, and the same form must be used, and the same supporting information supplied.

- 2.21 There is a streamlined renewal process for ranges where nothing significant has changed in range design, construction or operation. To use this provision, there must have been no changes to the design, construction or operation of the range that have, or may have, a material impact on the safety or ballistic characteristics of the range.
- 2.22 You should seek advice from a shooting range inspector or the Police clubs and ranges team before starting this type of renewal. You will still need a new inspection report from a shooting range inspector recognised by Police.

#### **Conditions of certification**

- 2.23 All range certification certificates are issued subject to conditions set out in regulations 28GZA to 28GZF of the Arms Regulations. The shooting range operator is responsible to ensure the conditions are met. These cover:
  - a. Maintaining range standing orders that are approved by Police,
  - b. Obtaining Police approval for any material changes to the range standing orders,
  - c. Complying with range standing orders,
  - Ensuring all range users have access to the current version of the range standing orders, and are notified of any changes,
  - Providing secure premises and storage facilities if any firearms or ammunition, or both, will be stored on the premises of the shooting range,
  - Keeping a record of persons who act as an officer on duty,
  - Keeping a record of any incidents or safety breachers that did not result in death or injury, but had the potential to do so,
  - h. Notifying a change in contact person.
- 2.24 A range certification certificate may be issued subject to any other conditions that Police considers appropriate.



	STEPS FOR MAKING AN APPLICATION FOR SHOOTING RANGE CERTIFICATION			
STEP	ACTION	DETAIL		
1	Shooting range operator reviews requirements.	<ul> <li>Shooting range operator reviews section 2 of this manual (available online from <u>www.firearmssafetyauthority.govt.nz</u>).</li> <li>Where firearms and/or ammunition will be stored at the range, they must review regulation 28GZD and 28GZE of the Arms Act 1992 and the Police Secure Storage Guide for Firearms and Ammunition at <u>Te Tari Püreke – Firearms Safety Authority website</u>.</li> <li>Shooting range operator obtains a copy of the application form for shooting range certification.</li> <li>If any firearms or ammunition, or both, will be stored on the premises of the shooting range and this has been selected on the application form, this will require an inspection of storage facilities which will be initiated by Police.</li> </ul>		
2	Shooting range operator* prepares range certification documentation.	<ul> <li>Produces the range standing orders.</li> <li>Completes the shooting range inspection checklist.</li> </ul>		
3	Shooting range operator* engages a trained shooting range inspector recognised by Police.	<ul> <li>Arrange a date and time for the range inspection.</li> <li>Provide the shooting range inspector with relevant documentation required to conduct the inspection such as the range standing orders and shooting range inspection checklist.</li> </ul>		
4	Shooting range inspector reviews documentation received from the Shooting range operator.	<ul> <li>Begins compiling the shooting range inspection report and reviewing the shooting range inspection checklist.</li> <li>Reviews the range standing orders and any additional documents.</li> </ul>		
5	The shooting range inspector inspects the range.	<ul> <li>Conducts a physical inspection of the range in line with the shooting range inspection checklist.</li> <li>Validates the range standing orders and all information provided by the shooting range operator.</li> <li>Records all relevant information including measurements.</li> <li>Takes photographs to support the shooting range inspection report.</li> </ul>		
6	Shooting range inspector completes the shooting range inspection report.	<ul> <li>Compiles their range inspection report from details recorded in the shooting range inspection checklist.</li> <li>Requests any further information from the shooting range operator required to complete the report.</li> <li>Reviews and checks the shooting range inspection report using the checklist as a guide</li> <li>Completes the shooting range inspection report.</li> </ul>		
7	The shooting range inspector submits their shooting range inspection report to the shooting range operator*.	- The shooting range inspector explains the report to the shooting range operator.		
8	The shooting range inspector assesses if further work is needed OR	<ul> <li>The shooting range operator takes any actions the shooting range inspector judges are needed for the application to be successful. Guidance from the shooting range inspector or an appropriate subject matter expert from a national shooting organisation/discipline may assist.</li> <li>The shooting range operator arranges a reinspection of the range when these actions are complete, so the shooting range inspector can produce another shooting range inspector inspection report.</li> <li>If the shooting range inspector judges that the application is likely to be successful, the process moves to step 9.</li> </ul>		

9	The shooting range operator or someone authorised to act on their behalf submits the application for shooting range certification to Police.	<ul> <li>Documents required:</li> <li>Application form for shooting range certification.</li> <li>Shooting range inspection report.</li> <li>Copy of range standing orders.</li> <li>Evidence that the applicant is authorised to make the application, if they are applying on behalf of a shooting range operator that is a body corporate (e.g. a company or incorporated society) or another entity such as a trust or an unincorporated shooting club.</li> </ul>
10	Police receive the application.	<ul> <li>Enter and record all relevant information/data from the application form and supporting documentation.</li> <li>Police confirms receipt of the application.</li> <li>Issue an invoice for the application fee.</li> </ul>
11	Applicant pays the fee	Police will begin to process the application once the fee is paid.
12	Police review the application.	<ul> <li>The national clubs and ranges advisor reviews the application and supporting document for compliance with the Arms Act and Arms Regulations.</li> <li>If any firearms or ammunition, or both, will be stored on the premises of the shooting range and this has been selected on the application form, this will require an inspection of storage facilities which will be initiated by Police.</li> <li>Police may seek further information from the applicant or any other source to assist with making a decision on the application.</li> <li>When satisfied, the national clubs and ranges advisor will make a recommendation to approve or decline the application.</li> </ul>
13	The national clubs and ranges advisor recommendation to the Commissioner's delegate – <b>'declined'</b> .	<ul> <li>The national clubs and ranges advisor formally recommends 'decline' explaining the reason(s).</li> <li>The Commissioner's delegate will review and consider the recommendation (this may include seeking further information).</li> <li>Decision is made to 'decline' the application.</li> </ul>
14	Police notify the Shooting range operator that their application is <b>'declined'. OR</b>	<ul> <li>Application 'declined'.</li> <li>Police notify the shooting range operator by email or cover letter with the reasons for the decisions.</li> <li>The notification will include advice on the appeal process.</li> </ul>
15	The national clubs and ranges advisor recommendation to the Commissioner's delegate – <b>'approved"</b> .	<ul> <li>The national clubs and ranges advisor formally recommends 'approve' explaining the reason(s).</li> <li>The Commissioner's delegate will review and consider the recommendation (this may include seeking further information.</li> <li>Decision is made to 'approve' the application.</li> </ul>
16	Police notify the shooting range operator that their application is <b>'approved'</b> .	<ul> <li>Application <b>'approved'</b>.</li> <li>Police notify the shooting range operator by email or cover letter.</li> <li>Police issue a certificate to the shooting range operator valid for 5 years (unless earlier cancelled or surrendered), subject to the conditions stated.</li> </ul>
17	Police update records.	<ul> <li>Police will update its records to reflect all relevant information received and submitted throughout the application.</li> </ul>

\* or someone authorised to act on the shooting range operator's behalf.

#### Notes:

- 1. Range standing orders can cover multiple ranges on a site.
- 2. A shooting range operator who is also a trained shooting range inspector recognised by Police may inspect their own range(s) and submit their shooting range inspection report to Police as part of their application for certification but are to declare their interest in the report to Police. It is recommended that the shooting range operator/shooting range inspector have their report peer reviewed by another shooting range inspector in these circumstances.
- 3. Applications for one-time use range certification will be treated as a priority application due to the time sensitive nature of the application.

#### Table 2.1 – Overview of the application process for shooting range certification

#### Range inspection for certification

2.25 A physical range inspection is a critical element of the certification process. A shooting range inspection can be conducted only by a trained shooting range inspector recognised by Police. The shooting range inspector will also review the range standing orders for content and accuracy against the physical features of the range. A list of trained shooting range inspectors is at <u>Te Tari Pūreke – Firearms Safety Authority website</u>.

#### Shooting range inspection checklist

2.26 The shooting range operator is responsible for completing the appropriate shooting range inspection checklist at <u>Te Tari Pūreke – Firearms Safety Authority</u> <u>website</u>, including the range plan diagrams (recording the actual measured and/or calculated dimensions of the range structures/features). The shooting range inspector will use this checklist during their inspection to assist with the checking and recording of information.

#### Shooting range inspection report

2.27 The shooting range inspector will prepare a shooting range inspection report based on information contained in the shooting range inspection checklist and the shooting range inspector's inspection of the range. The report will contain supporting photographs and map images. The shooting range inspector will submit their shooting range inspection report to the shooting range operator assessing whether the range complies with requirements. If the range is potentially non-compliant the shooting range operator should carry out remedial work and request a re-inspection of this work. If (or when) the range is assessed as compliant, the shooting range operator will submit the shooting range inspection report to Police as part of their application for shooting range inspection report) and decide whether or not to grant the application. In some cases, a member of Police may also need to visit the range to check some aspects of the inspection report.

#### Forms

2.28 All relevant forms, templates, checklists and reports can be found at <u>Te Tari</u> <u>Pūreke – Firearms Safety Authority website</u>.

#### Additional inspections

2.29 A member of Police trained as a shooting range inspector may undertake additional inspections of existing ranges. This is separate to the initial certification of a range and is part of the Police regulatory function. For these inspections, the member of Police must give at least 7 days notice of their intention to enter and inspect a shooting range. This member of Police may assess that a range is not being operated with proper regard to individual or public safety, or does not meet requirements, or is not complying with the conditions of certification. Where a shooting range has been assessed as not complying, the member of Police will make recommendations for remedial action. Depending on the nature of this the issue, the shooting range may be subject to an improvement notice or its certification may be cancelled requiring the shooting range to cease operating.

All shooting ranges as defined by the Act must be certified by Police. Certification includes the inspection of range structures both artificial and natural features that constitute the shooting range. It also includes a review of the range standing orders required to ensure the safe operation of the shooting range.



Q

Forms are available at <u>Te Tari</u> <u>Pūreke – Firearms Safety</u> <u>Authority website</u>

#### Conditions that may affect shooting range certification

#### 2.30 Departure from the conditions of initial certification

- The shooting range operator must request Police to review a range's certification if it is intended that the operation of the range will depart from the conditions imposed when the range was certified.

- 2.31 **Improvement notice** Police may issue an improvement notice to a shooting range operator where a range operator:
  - Is failing, is likely to fail, or has failed to comply with any conditions of the range certification (e.g. failure to comply with the range standing orders, or where the requirements for range construction are not being met), or
  - b. Is contravening, is likely to contravene or has contravened the Arms Act or Arms Regulations.
- 2.32 The improvement notice will specify a reasonable period in which the shooting range operator is to:
  - a. Remedy the non-compliance or contravention, or
  - b. Prevent a likely non-compliance or contravention from occurring.
- 2.33 The means by which the range improvement is validated will be described in the improvement notice.
- 2.34 **Temporary suspension of a shooting range's operation** - If the shooting range operator fails to comply with an improvement notice within the stated time frame,

a member of Police may temporarily suspend the shooting range's operation while considering whether to cancel the range's certification. The suspension lasts until notice of the decision is given to the shooting range operator. If the notice is not given within 90 days after the suspension takes effect, the suspension ends with the close of that 90 day period.

#### 2.35 Cancellation of shooting range certification -

Police may cancel a shooting range's certification if satisfied that:

- a. The shooting range is no longer being operated as a shooting range, or
- b. The shooting range is not being operated with proper regard to individual or public safety, or
- c. The operator is not complying with any of the conditions of certification, or
- d. The shooting range no longer meets all required safety standards published by the Commissioner, or
- e. Any territorial authority or regional council consents have been cancelled, or
- f. The shooting range operator has failed to comply with an improvement notice.
- 2.36 A shooting range operator may elect at any time to surrender their range certification before expiry if the shooting range operator does not want to operate the range any more. If there is to be a new shooting range operator for the same range, the new shooting range operator must apply for range certification.



# Section

Backstop

Side Wall

Range Floor

Side Wall

Ter.

Bullet Catcher

Slope Angle

34°

Target Line

Minimum 30° (Critical)

### Section 3 Safe design and construction of a shooting range



#### Safe design and construction of a shooting range

3.1 The key objective for the safe design and construction of a shooting range is that projectiles and any ricochets are contained with the active range area (the area in which shooting activity is conducted on a range, including the danger area applied to the range). This is achieved by containing the cone of fire and any necessary margin of error for the type of shooting activity carried out on the range.

#### Shooting range design guidance

- 3.2 This section sets out the core requirements and recommendations for the safe design and construction of a shooting range.
- 3.3 Sections 4 to 6 contain additional guidance on the safe design, construction and operation for shooting ranges. Safety considerations for shooting activities that do not require shooting range certification are detailed in section 8.

# Shooting range design and construction techniques

3.4 The following headers are examples of shooting range design and construction techniques that can be used for a variety of shooting activities and may be customised for specific shooting disciplines (refer to section 4 for examples of various range designs). When developing this manual Police used for reference shooting range manuals developed by national shooting organisations. These manuals contain additional information and guidance relating to target shooting for individual disciplines. For further information contact the relevant shooting organisation as listed in section 9.

#### Generic shooting range design

3.5 A shooting range can have different configurations depending on the intended shooting activity. Most shooting ranges have generic design features that may include a firing point(s), a firing line(s), a target area, a bullet catcher and/or backstop and a danger area. Additional range structures may also include covered firing points, target mechanisms, side berms and/or side walls.

#### Pistol/rifle shooting ranges

3.6 A range designed for safe target shooting at various ranges using rifle and/or pistol. Range features may include those detailed in paragraph 3.5 above.

For additional information not contained in this manual, contact the Police clubs and ranges team.



**!** A process flowchart, 'Establishing a shooting range' is included at section 1, figure 1.1.





Figure 3.1 – Examples of rifle ranges



Figure 3.2 – Examples of pistol ranges

#### **Gallery range**

3.7 A gallery range design includes a mantlet and markers gallery for target systems and/or persons doing target marking. Some gallery ranges have been modified with the introduction of electronic target systems.



Figure 3.3 – Examples of gallery ranges

#### **Baffled range**

3.8 A baffled range has incorporated into its design a series of overhead, side and/or ground baffles, or similar construction features, that serve to contain all direct fired projectiles and most potential ricochets to the active range area. Baffled ranges are reduced danger area ranges that allow for a splash, splatter, or pop-over danger area. Baffles may be positioned within the range design cone of fire; however, their potential impact surfaces must be clad with sacrificial timber to reduce the likelihood of ricochets and backsplash. Baffles and protective cladding must be regularly maintained to ensure they remain effective and fit for purpose.









#### Skeet and trapshooting range

3.9 A skeet and trapshooting range is a shotgun range designed for the discharge of shot at moving clay targets that are thrown on fixed flight paths or within prescribed arcs during skeet and trapshooting activities.



Figure 3.5 – Examples of skeet ranges



Figure 3.6 – Example of a down the line (DTL) trap (field) range

#### Sporting clay range

3.10 A sporting clay range is a range laid out over natural terrain designed for the discharge of shot at moving clay targets thrown on fixed flight paths or within prescribed arcs during a sporting clay activity.



Figure 3.7 – Example of a sporting clay shooting range (without a shooting stall)

#### Indoor shooting range

3.11 Indoor ranges consist of firing lines, an active range area with a down-range protected zone, and a bullet trap (backstop), all contained in a building designed to not allow projectiles to escape. The range should also have other facilities such as a ventilation system, target arrays and waiting areas. Indoor ranges are typically laid out with firing points and firing lines located at specific distances from the target line. Indoor ranges must be cleaned effectively to ensure there is no build-up of dust in any part of the range. No dust-absorbing materials should be in the range, and all surfaces should be smooth to facilitate the ease of cleaning.





Figure 3.8 – Examples of indoor ranges

#### Field shooting range

3.12 A field shooting range is designed to simulate shooting activities in an outdoor shooting range environment, so is likely to have little or no infrastructure. Where this type of range does not have a suitable backstop a full ammunition danger area template must be applied. Where a topographic feature such as a hill exists a reduced danger area template or a no danger area criteria may be applied.





Figure 3.9 - Example of field shooting ranges

#### Black powder range

3.13 A black powder range is designed for muzzle loading and black powder cartridge firearms. Range features may include a firing point(s), a firing line(s), a target area, a bullet catcher and/or backstop and a danger area. Where a topographic feature such as a hill exists a reduced danger area template or a no danger area criteria may be applied.



Figure 3.10 – Example of a black powder range



SUPETY N

2.20

Side Wall

## Section 4 Components of shooting range design and construction



4.1 The following range design features are components of safe design and construction for almost all shooting ranges.

#### Cone of fire

4.2 The cone of fire is the distribution of fired projectiles within a margin of error in the vertical and horizontal planes (see figure 4.1). Cone of fire is applied above, below and to either side of the point of aim, and is critical in determining the design specification of a range. The cone of fire accounts for acceptable deviation caused by errors associated with the firer, machining or manufacturing tolerances of the firearm and ammunition. Approved range design cones of fire are listed in table 4.1.

#### Range design cone of fire

- 4.3 A range can be designed for the largest cone of fire of the firearm calibres and ammunition approved for use. This could be impacted by natural features and/ or man-made structures available to limit the range danger area, within the approved land boundary (for range danger area criteria refer to section 5). The approved range design cones of fire are to be listed in the range standing orders and are applied as follows:
  - a. For ranges with a 100 metre firing distance and greater (200 metre, 300 metre and further), the design cone of fire is applied from the 100 metre firing distance
  - b. For ranges that are less than 100 metres, the range design cone of fire is applied from the furthest firing distance
  - c. Where a shooting discipline (e.g. National Rifle Association of New Zealand) does not have a 100 metre firing distance, the range design cone of fire is applied from the closest firing distance where zeroing is conducted.
- 4.4 For ranges with a 100 metre firing distance and greater (200 metre, 300 metre and further), a shooter must demonstrate their ability to achieve the approved cone of fire at the 100 meter firing distance to the satisfaction of the officer on duty before progressing to longer firing distances. This procedure is to be detailed in range standing orders.

- 4.5 The shooting range operator must make an application to Police for the approval to use or design a range with a cone of fire not listed in table 4.1. This may be due to the following:
  - a. A national shooting organisation cone of fire requirement for a particular discipline
  - Limitations of available land approved for use as a shooting range including any associated range danger area
  - c. The location and dimensions of natural features and/or range structures (e.g. the height of a backstop)
  - Availability of additional land approved for use as a shooting range including any associated range danger area.
  - e. The skill level of the shooter validated by the shooting range operator.
- 4.6 The application is to include details on the following:
  - a. Who (organisation and/or individual) will be approved to use the range
  - b. How the shooting range operator will validate the ability of a shooter to achieve the approved cone of fire
  - c. How the shooting range operator will monitor the ability of a shooter to maintain the cone of fire
  - d. The actions to be taken if a shooter is unable to maintain the cone of fire.

# Inability of a shooter to achieve and maintain the cone of fire

- 4.7 The inability of a shooter to achieve and maintain the approved cone of fire is a risk as projectiles may escape the range danger area. Range standing orders must set out how the shooting range operator will validate the ability of a shooter to achieve and maintain the cone of fire and the corrective actions if unable to do so. If the error cannot be corrected the shooter must cease shooting. Errors could be caused by:
  - a. **Misdirected firing.** Misdirected firing error is firing that is deviating from the point of intended impact associated with competently fired yet misdirected shots.

- b. **Random firing error.** Random firing errors result from single shots that are unintentionally fired with significant random deviation from the point of intended impact.
- c. **Wild firing error.** Wild firing errors result from single shots that may be deliberately aimed or unintentionally fired in gross contravention of range discipline, which may impact anywhere inside the total energy range of the ammunition.

#### **Projectile velocity**

- 4.8 Projectile velocity is expressed as follows:
  - a. High velocity is ammunition that leaves the firearm at 2,000 feet per second (fps) or greater.
  - b. Low velocity is ammunition that leaves the firearm at less than 2,000 fps.



Target centre height measured from the ground

#### Figure 4.1: Example of a cone of fire around point of aim and target centre height dimension



Cones of Fire (see notes 1 and 2)			
All approved pistols and pistol ammunition calibres/types.	23 mils (1.3 deg)	Unsupported - Prone/Sitting/Kneeling/Standing	
All approved rifles and ammunition calibres/types.	20 mils (1.125 deg)	Unsupported - Prone/Sitting/Kneeling/Standing	
(Can be used for approved target pistol sillouette shooting)	10 mils (0.563 deg)	Supported - Prone/Sitting/Kneeling/Standing	

#### Notes:

- 1. Police are the approving authority for range design cones of fire to be used on any shooting range in New Zealand. If a shooting range operator intends to use a cone of fire not listed in the above table, they must contact Police for review and approval.
- 2. A shooting position is considered to be supported when a natural or artificial aid to shooting is used, e.g. a bench rest, bipod, sand bag, fencepost, tree trunk, rifle sling.

Table 4.1 – Range design cones of fire



#### Environmental planning considerations

- 4.9 When establishing a new shooting range, the shooting range operator must consult with territorial authorities and regional councils about potential environmental issues such as excessive noise levels, contaminated waste management (which may involve removal), or contamination of watercourses. Existing ranges may already be operating under existing consents and may or may not need additional territorial authority or regional council approvals.
- 4.10 Environmental issues associated with indoor ranges and to a lesser extent some outdoor ranges may include:
  - Lead contamination into the ground, ground water, waterways, buildings, and surrounding areas,
  - Extraction of airborne contaminants (indoor ranges) – the ventilation system should be filtered before the airflow expels into the external environment,
  - c. Noise containment and suppression potentially excessive internal and external noise levels, and
  - d. **Potential risk of fire** due to excessive build-up of unburnt powder e.g. initiated by muzzle flash.
- 4.11 Health issues associated with indoor and outdoor shooting ranges may include:
  - a. Lead exposure,
  - b. Potential harm from airborne contaminants produced during firing,
  - c. Potential damage to hearing, and
  - d. Potential damage to eyesight.

# Landowner permission (including the range danger area)

4.12 Landowners who are affected by the operation of a shooting range and its assosciated danger area must consent to the use of their land as a shooting range before a shooting range can be certified..
It is necessary to seek new permission when land ownership changes. It is recommended that permission is recorded in writing. For security of tenure, a shooting range operator is likely to want a formal arrangement for the land covered by the range operations.

#### Air danger height and airspace considerations

4.13 Air danger height is the maximum height above ground level in which a hazard to aircraft may exist. The air

danger height is either the highest point of an aimed shot measured from a firing position, or the maximum ricochet height of the ammunition fired.

- 4.14 Air danger height has two applications in the design and operation of a shooting range, and must be considered for:
  - a. Civil aviation authority (refer to link below) The range operator must notify the Civil Aviation Authority in advance if the trajectory of a projectile is likely to exceed:
    - (1) 45 metres (150 feet) above ground level within 4 km of an aerodrome boundary, or
    - (2) 120 metres (400 feet) above ground level if more than 4 km from an aerodrome boundary.
  - b. Ammunition ricochet danger height: Ammunition projectiles may travel in a vertical dimension from potential ricochets to a height above ground level in which a hazard to aircraft may exist. The potential for ammunition ricochet is considered in the design, construction and operation of shooting ranges, e.g, the use of baffles. The potential for ammunition ricochet danger height must be considered for reduced danger area and full danger area ranges, however, it is not a requirement for no danger area ranges.
- 4.15 Where a shooting range is located within 4 km of an aerodrome, it is recommended that the shooting range operator liaises with the aerodrome management to identify any procedures required for the safe operation of both facilities. This may require a formal agreement to be established between the shooting range operator and the aerodrome management.

#### **Airspace intrusion**

4.16 Although there have been dimensions stated above for air danger heights, it is difficult to accurately judge the height of low flying aircraft within the air danger height of a shooting range, without specialist equipment. Therefore, any airspace intrusion is to be controlled safely by the officer on duty stopping all shooting for the duration of the intrusion. This is to be clearly stated in range standing orders.

#### **Useful links**

Civil Aviation Authority (CAA) Rules – Part 77.9 – Notice of use of weapons – hhtps://www. aviation.govt.nz/rules/rule-part/show/77/1

#### Range axis (direction of fire)

4.17 When planning and sighting the orientation of a new range, the range axis should run as close as possible to north/ south (the direction of fire to the south) to avoid shooters being affected by the rising and setting of the sun. The range axis can be measured by obtaining a bearing from a compass or global positioning system (GPS) (converting the compass bearing to a grid bearing if applicable) in the direction of fire and plotting it onto a map. This bearing is used as the range centre line to determine the range design geometry and range danger area.

#### Backstops

4.18 A backstop is located around or behind a bullet catcher to capture wide shot and ricochet. If the range has no bullet catcher, the backstop also fulfils the purpose of a bullet catcher. A backstop consists of a natural or a constructed artificial feature and can be located up to 25 metres behind the target line.

- 4.19 Where tyres are used in a backstop and are located in the main impact area directly (within 25 metres of the target line) behind the targets they must be:
  - a. Filled, stacked staggered and overlapped to provide uniform, gap-free coverage.
  - b. Securely supported and configured to prevent toppling, sagging, or leaning.
  - c. Covered with at least 500 mm of fill material if exposed within the main impact area.
- 4.20 Tyres may be used in backstops to increase their height providing they are stacked staggered and overlapped to achieve uniform, gap-free coverage.
- 4.21 Where reasonably practicable the range axis should be established at a right angle to the face of the backstop. See figure 4.2 for an example of how a backstop is designed to capture wide and high angle shot and ricochet from range floor strike.



Figure 4.2: Backstop designed to capture CofF and range floor strike from the first point of impact (FPI) and the resultant ricochet

4.22 At the time of certification the forward (impact) face of the backstop must have a slope angle no less than 34 degrees consistently across the face of the backstop to a minimum height and width as described in table 4.2. The minimum slope angle thereafter is 30 degrees to allow for degradation as a result of projectile impact, weathering and natural ground settlement. Once the slope angle reaches 30 degrees the face of the backstop must be refurbished back to 34 degrees (see figure 4.3). The slope angle may exceed 34 degrees where the surface material and structure of the backstop can be maintained in position. Slopes of 56 degrees or more are expected to prevent ricochet. These angles are calculated from the horizontal plane but can be applied as an impact angle when firing downhill, e.g. during field shooting. There are many proprietary systems available to achieve this where the material within the cone of fire cannot be made stable at that angle..

#### **Backstop dimensions**

4.23 The height, width and depth of the backstop are critical design components required to achieve reduced danger area or no danger area status for a range. These dimensions will depend on several factors including the type of shooting activity, type of firearm, calibre, cone of fire and firing distance (see table 4.2 for firing distances up to 100 metres). The total width of a backstop includes the requirement for a flank extension at both ends of the backstop. The flank extension must extend far enough to capture the design cone of fire for the range from

the extreme left and extreme right of the firing points. Where side backstops, side berms or side walls connect to the backstop, there is no requirement to calculate or measure a flank extension. Vegetation (grass, shrubs) and trees are not included when calculating the height of a backstop.

# Topographic features used to establish reduced range danger areas

4.24 Where a topographic feature such as a hill is located more than 25 metres to the rear of the target line, it is recommended that a bullet catcher is established no more than 1 metre behind and parallel to the target line. The criteria required to use a distant topographic feature to establish a reduced danger area range are contained in section 5 of this manual.

#### **Bullet catchers**

- 4.25 Bullet catchers are designed to capture most projectiles fired at each target. A bullet catcher may be a standalone structure or be part of a backstop immediately behind the target line. The use of bullet catchers is not mandatory but are used on some ranges to:
  - a. Minimise degradation (e.g. loss of slope) of the backstop due to projectile impacts.
  - Reduce the required backstop maintenance (e.g. reshaping of the backstop face when projectile tunnelling starts to occur, and de-mining of lead and copper from the backstop).



Figure 4.3 : Backstop slope angle
#### NDA RANGE (up to 100 metres) - RIMFIRE - (For firing distances over 100 metres refer to section 5)

Pistol (Low velocity)						Rifle (Low velocity)					
Firing distance to target line (m)	≤ 15	25	50	75	100	Firing distance to target line (m)	≤ 15	25	50	75	100
Height (m)	2.5	4.0	6.0	7.0	8.0	Height (m)	2.0	2.5	3.5	4.5	5.5
Extension beyond flank target (m)	1.0	1.5	2.0	2.5	2.5	Extension beyond flank target (m)	1.0	1.0	1.5	2.0	2.5
Slope angle from horizontal = See r Backstop depth (at crest) no less th Impact Surface - No visible hard ob within the CoFF excluding the targe Condition = No degradation or scoo Recommended target centre height	note 8 nan 1 m jects et oping t 1200 i	mm				Slope angle from horizontal = See no Backstop depth (at crest) no less tha Impact Surface - No visible hard obje within the CoFF excluding the target Condition = No degradation or scoop Recommended target centre height	ote 8 an 1 m ects ping 1000 m	ım			

#### NDA RANGE (up to 100 metres) - CENTREFIRE - (For firing distances over 100 metres refer to section 5)

Pistol/Rifle (Low velocity)						Rifle (High velocity)					
Firing distance to target line (m)	≤ 10	15	25	50	75	100	Firing distance to target line (m)	≤ 25	50	75	100
Height (m)	2.5	3.0	5.0	8.0	12	15	Height (m)	4.0	5.0	6.0	7.0
Extension beyond flank target (m)	1.0	1.5	2.5	4.5	4.5	4.5	Extension beyond flank target (m)	1.0	1.5	2.0	2.5
Slope angle from horizontal Backstop depth (at crest) no Surface standard - No visible Impact Surface - No visible I within the CofF excluding th Condition = No degradation Recommended target centre	= See o less t e hard hard ol ne targ nor sco e heigt	note 8 shan 1 surfac bjects et poping nt 1200	m xes ) mm				Slope angle from horizontal = See note Backstop depth (at crest) no less than Surface standard - No visible hard surf Impact Surface - No visible hard object within the CoFF excluding the target Condition = No degradation or scoopin Recommended target centre height 12	28 0.9 m aces ts ng 00 mm			

- Note 1: Level and clear range floor (or line of fire).
- Note 2: Target Centre height (TCH) is 1200 mm. If TCH exceeds 1200 mm, the backstop height increases by the TCH difference (i.e. 25 m Rimfire pistol NDA backstop height is 5 m. TCH is 1500 mm therefore overall backstop height must increase by 300 mm to 5.3 m (5 m plus 300 mm = 5.3 m).
- **Note 3:** Flank extension is measured from the outermost flank target (to the left or right of the target line).
- Note 4: Overall heights have been calculated allowing for primary firing positions of lying, kneeling and standing.
- **Note 5:** Height is calculated from the furtherest firing line to the target line and the toe of the backstop being no further than 3.5 m from the target line.

- Note 6: NDA Backstop height is based on the elimination of any CofF range floor strike forward of the target line. If CofF range floor strike occurs the Shooting Range Operator is to consider additional control measures for ricochet capture, such as a canopy, construction of baffles, or an increased TCH in order to maintain a NDA status.
- Note 7: When a Shooting Range Operator (SRO) permits multiple firearm type to be used on the same range, the greater of the height dimensions are to be applied.
- Note 8: Backstop slope angle is ≥ 30 to 34 deg (533 to 605 mils).

(Reference: DSA 03. OME Part 3 - Volume 2 - Non-Standard NDA Backstop calculations modified with New Zealand shooting discipline criteria)

#### NOTE: All dimensions can be rounded up to the nearest 0.5 m or whole metre for ease of practical measurement.

Table 4.2 – Examples of backstop dimensions

## **Bullet catcher dimensions**

- 4.26 The dimensions of the bullet catcher depend on its ability to capture the cone of fire wherever a target is positioned along the target line (see figure 4.4). Where reasonably practicable the bullet catcher should be established at a right angle to the range axis. The bullet catcher may be constructed with a core of solid material covered with fill material (e.g. soil, sand, shredded rubber chip) as shown at figure 4.4. To ensure the bullet catcher does not receive excessive damage, range standing orders should detail the maximum permissible muzzle velocity or energy to be used on the range as prescribed in table 4.3. The bullet catcher is to meet the following requirements for low velocity (see table 4.4) and high velocity (see table 4.5) ammunition.
- 4.27 If rubber chip is to be used as bullet catcher fill material, it should be shredded rubber chip that has no steel or fabric reinforcement, with elongated elements removed

to produce angular rubber fragments. The fragments (chip) should be a regular shape approximately 10 – 25 mm in any direction so they tightly interlock. Rubber chip presents a potential fire hazard, however rubber chip used on indoor ranges can be sprayed with a fire-retardant compound to reduce the fire risk. In time, projectile impact will break the rubber chip down from the prescribed shape and it should be replaced.

- 4.28 Exposed tyres (even though filled will soil) can present an additional backsplash hazard and are not to be in a bullet catcher unless covered with no less than 500 mm of fill material.
- 4.29 Hay or straw bales should not be used in a bullet catcher.
- 4.30 A bullet catcher should be checked regularly to ensure there is no build-up of lead and balling at the mean point of impact behind each target that might cause backsplash.





Examples Bullet Catcher Maximum Muzzle Velocity (MV) or Muzzle Energy (ME) - Established Range										
Indoor ranges	(m/s) MV	Joules ME	Outdoor ranges	(m/s) MV	Joules I					
Rimfire pistol or rifle	530	285	Rimfire pistol or rifle	610	480					
Centrefire pistol	520	645	Centrefire pistol	655	2030					
Centrefire rifle (NDA)	1000	4500	Centrefire rifle (NDA)	1000	7000					

No requirement for limitation during field shooting (No bullet catcher)

Note: 1. To maintain a bullet catcher in a serviceable state, range standing orders should detail the maximum permissible firearm muzzle velocity or energy to be used on the range.

#### Table 4.3 – Examples of bullet catcher maximum muzzle velocity or muzzle energy

BULLET CATCHER DIMENSIONS - LOW VELOCITY									
Distance from firing line (m)	≤ 10	15	25	50	75	100			
The bullet catcher must be no less than 2.5-m in height or exceed the maximum target height by no less than 0.5-m, whichever is the greater.									
Flank extension (m)	1	1.5	1.6	1.8	2.0	2.0			
Fill material depth behind targets measured parallel to the line of fire must be no less than 500-mm.									

At the time of certification the forward (impact) face of the bullet catcher must have a slope angle no less than 20 degrees consistently across the face of the bullet catcher. The minimum slope angle thereafter is 15 degrees to allow for degradation because of projectile impact, weathering and natural ground settlement. Once the slope angle reaches 15 degrees the face of the bullet catcher must be refurbished back to 20 degrees. The slope angle may exceed 20 degrees where the surface material and structure of the bullet catcher can be maintained in position. Where possible slopes of 56 degrees or more should be used as these are expected to stop ricochet. There are many proprietary systems available to achieve this where the material within the cone of fire cannot be made stable at that angle.

Table 4.4 - Bullet catcher dimensions - Low Velocity

### BULLET CATCHER DIMENSIONS -HIGH VELOCITY

Distance from firing line (m)	≤ 15	25	50	75	100
Crest height (m)	2.5	2.5	2.5	2.5	2.5
Flank extension (m)	1.5	1.6	1.8	2.0	2.0

Fill material depth behind targets measured parallel to the line of fire must be no less than 900 mm.

At the time of certification the forward (impact) face of the bullet catcher must have a slope angle no less than 34 degrees consistently across the face of the bullet catcher. The minimum slope angle thereafter is 30 degrees to allow for degradation because of projectile impact, weathering and natural ground settlement. Once the slope angle reaches 30 degrees the face of the bullet catcher must be refurbished back to 34 degrees. The slope angle may exceed 34 degrees where the surface material and structure of the bullet catcher can be maintained in position. Where possible slopes of 56 degrees or more should be used as these are expected to stop ricochet. There are many proprietary systems available to achieve this where the material within the cone of fire cannot be made stable at that angle.

Table 4.5 – Bullet catcher dimensions – High Velocity

## Mobile bullet catchers (for low velocity ammunition only)

- 4.31 For targets that are positioned on the range floor at locations other than at the bullet catcher/backstop/ side backstop, mobile bullet catchers may be used for low velocity ammunition only. They should be large enough to capture the cone of fire for the distance being fired. The most common mobile bullet catcher is a 200 litre plastic drum filled with a material to stop rounds from spinning within and escaping from the drum. Empty drums must not be used. Options for the use of drums are:
  - a. Cut the top shoulder off the drum.
  - b. Fill with the selected material:
    - (1) Conveyor belt the thickness of the belting must be at least two complete layers around. Depending on the width of the conveyor belt it may need to be stacked two layers high, or
    - (2) Other fill material such as rubber chip, sawdust, sand or soil. When using other fill material, the drum must be filled to the top.
  - c. Paper targets must be placed on the lower half of the drum.
  - d. Steel targets must be placed directly in front of the drum.

## Side berms and side walls

- 4.32 The use of side berms is not mandatory, but are used on most range to:
  - a. Prevent movement of people or animals onto the active range area.
  - b. Reduce the likelihood of an errant shot, ricochet, backsplash or splatter escaping the active range area.
  - c. Separate adjacent ranges and protect people in areas adjacent to the range.
  - d. Protect buildings or equipment (e.g. a target shed).
- 4.33 If side berms are used, they are for down range shooting only and they should.
  - a. Be no less than 2.1 metres high measured from the range floor.
  - b. Have a slope no less than an angle of 30 degrees.
  - c. Have a crest depth of no less than 600 mm.
  - d. Connect with the backstop (where practicable) and be continuous (without gaps).
  - e. Be long enough to shelter an adjacent area where people or equipment are likely to be.

- 4.34 Tyres may be used in side berms as a means to increase their height. If tyres are used for these purposes, they should be:
  - a. Stacked staggered and overlapped to provide uniform, gap-free coverage.
  - b. Cut away on one side, filled with soil or sand that is firmly compacted (though fill material may not be required if the tyres can be stabilised e.g. with conveyor belt material tacked on the tyres.
  - c. Securely supported and configured to prevent toppling, sagging, or leaning.
  - Truck and other machinery tyres can be used without filing but must be stacked without gaps.
- 4.35 Side walls are not mandatory but may be used to separate adjacent ranges. They should be vertical and at least 2.1 metres high measured from the range floor. They should be constructed of materials as set out in table 4.6 and not have any gaps along the entire length.

# Side backstops (for low velocity ammunition only)

4.36 If the cone of fire is to cover a side berm or side wall then a properly constructed backstop is required in that location which must capture the cone of fire and any ricochet. This is called a side backstop and is to meet the same requirements as for a backstop except they are to be no less than 2.5 meters high measured from the range floor.

# Range floor

4.37 The range floor is defined as the space between the furthest firing point or line and the most distant target point or line. Where practicable, it should be reasonably level, firm, freedraining to prevent ponding and have a covering of topsoil free of any material such as rocks that might cause a ricochet. Grass is the most common top cover, however, fine granulate stone chip is an acceptable alternative. Particular attention is needed to cover any exposed hard surfaces (e.g. steel target frames). The range floor should not contain any standing bodies of water (e.g. lake, river or stream) that projectiles could be fired in to, unless a berm or shelter is in place to prevent impact. This reduces the potential for ricochet and contamination of water courses. Field shooting range floors are natural features that must allow clear line of fire to the target.

# Baffles and protective cladding

- 4.38 Baffles are constructed and positioned to contain projectiles from escaping the active range area. The projectiles may be direct impact or ricochets. If baffles are constructed of hard material such as steel, protective cladding must be attached to baffle surfaces that are expected to receive direct impact or ricochet to reduce backsplash. Protective cladding should be checked for serviceability and hidden attrition (unseen degradation of the base material covered by the cladding) as part of the range maintenance schedule. Baffles can be constructed on the ground, on side walls and overhead.
- 4.39 Table 4.7 contains recommended dimensions for the minimum thickness of construction materials considered impenetrable to bullet strike.



4.40 Table 4.7 contains recommended dimensions for steel protective plating for ranges. Where there is any doubt that these dimensions may not provide adequate protection for specific shooting activities additional guidance may be requested from Police.

# Firing points and firing lines

- 4.41 Firing points are the specific locations from which individual shooters fire at their targets. They are intended to control the location from which shooters fire and help to direct their firing. This is particularly important on baffle ranges where the baffles are located based on firing positions. A firing line is a group of individual firing points with a common attribute e.g. distance to the targets.
- 4.42 Firing points and lines should be sited parallel to the target line and where possible the target line should be parallel to the bullet catcher and backstop.

# Firer position spacing

- 4.43 Firer position spacing is measured centre-to-centre between adjacent firer positions. The spacing of firer positions along the firing line should be large enough that:
  - a. Shooters do not cause unnecessary distraction to each other during firing e.g. being hit by ejected cases.

- b. The officer on duty can conduct their duties e.g. supervise shooters, clear firearms and assist shooters as needed.
- 4.44 Firer position spacing must not be so large that the officer on duty cannot maintain adequate control of the firing line. Having the correct firer position spacing for the intended range use will minimise shooter errors while promoting the optimum and safe use of range facilities. Depending on the shooting discipline, the recommended spacing between firers is 1.5 metres.

# Firing line height (elevation)

- 4.45 Where practicable and depending on the range design and its intended use, firing lines can be elevated above the range floor. This elevation keeps the individual firing points dry and improves visibility of the target area. Elevated firing lines must be constructed to provide for the safe movement of shooters on and off them.
- 4.46 Elevating the firing point may also have the effect of removing the range floor from the cone of fire (a similar effect to sloping the floor toward the target area). If multiple elevated firing points are provided on a range, range design must ensure that firing points positioned in front of other firing points do not interfere with any shooter's line of sight or create an unacceptable ricochet hazard.

Minimum Thickness (mm) of Construction Materials Considered Impenetrable to Bullet Strike (Hard Wood (h/w), Soft Wood (s/w))											
Ammunition	Concrete (40 MPI)	Timber casing	Concrete Block	Timber							
Rimfire	75	100	100	125h/w or 150 s/w							
Centrefire pistol	150	50 timber either side with a 100 fill	215	175h/w or 200 s/w							
Centrefire rifle	200	50 timber either side with a 150 fill	230	250h/w or 375 s/w							

Table 4.6: Minimum thickness of construction materials

Steel Protective Plating for Ranges (mm)										
Ammunition	Defence zone/Baffles	Bullet catcher - Impact								
Rimfire	5 direct - 3 flank	6 mild - 4 armoured								
Centrefire pistol	6 direct - 5 flank	8 mild - 6 armoured								
Centrefire rifle	12 - 8 armoured (see note 1)	See note 2								

**Note: 1.** Minimum recommended armoured steel grade for centrefire rifle is AR500 (or equivalent). **Note: 2.** It is recommended that design advice specific to the range is obtained.

Table 4.7: Steel protective plating for ranges

## Firing line depth

- 4.47 Firing line depth is the distance measured from the front edge of the firing line to the rear edge of the firing line. Each firing line must be deep enough to accommodate the shooters and their equipment and provide space for the officer on duty (or any other designated range safety person) to function behind them without any obstructions. The recommended firing depth is a minimum of 2.5 metres with an additional minimum of 1 metre behind for any range safety persons.
- 4.48 Some shooting organisations have minimum firing line depth requirements in their competition regulations.

## **Covered firing line**

4.49 The firing line may be covered with a weather shelter. The height and construction must not interfere with the shooters or the officer on duty during any part of their activities on the firing line e.g. preparation, firing, supervision. The firing point cover must not obscure the view of the active range area from the shooters or the officer on duty. The firing point cover should, where reasonably practicable, be covered with noise absorbent material to reduce the noise reverberation effect on shooters and safety staff.

## Target centre height

4.50 Target positioning is critical to ensure projectiles are contained within the range danger area by reducing the potential for range floor strike. The target centre height depends on the physical structures of the range and should enable a near level line of fire although there are circumstances that may require either elevated or depressed lines of fire (uphill or downhill shooting). A depressed line of fire could be an advantage if ground permits where the taget centre height can be measured based on the impact angle.

## **Targets**

4.51 Targets can be constructed of various materials. Targets constructed of penetrable materials such as paper, cardboard, core-flute and thin plywood are considered ground impact surfaces (see paragraph 5.15) for the purpose of applying an ammunition danger area template. Targets constructed of non-penetrable materials such as steel are considered hard impact surfaces (see paragraph 5.15) for the purposes of applying an ammunition danger area template. 4.52 The target line is the area where a single target or several targets are positioned. This area can be a marked line on the range floor or have target support mechanisms such as timber sockets to support a target. Target positioning is critical to ensure projectiles are contained within the range danger area by reducing the potential for range floor strike, to give a full target exposure for shooting practice and to prevent damage to range structures. The target line should be located as close to the toe of the bullet catcher or backstop as possible.

### Moving targets

4.53 For ranges where moving targets are used the design of the range and application of the ammunition danger area template must be considered, and the extremity of target runs and firing points clearly marked on the range.

### Steel targets

- 4.54 For approved Pistol New Zealand shooting activities where steel targets are used, the provisions of the Pistol New Zealand Steel Target Safe Use Guide for pistol shooting dated 1 November 2022 are to be used. Other shooting disciplines have different types of steel targets to suit their requirements.
- 4.55 There are two types of steel targets generally used for target shooting:
  - a. Reactive these targets react by falling when struck, e.g. silhouette and poppers
  - b. Non-reactive these targets are fixed and do not move when struck, e.g. some cowboy action targets, gongs. If non-reactive steel targets are used at close distances (20 meters or less), they should be set at a forward sloping angle of no less than 15 degrees (from the vertical) to direct splatter and ricochet into the ground.
- 4.56 Steel targets should be positioned to be shot from directly in front only, and not positioned where projectiles may hit the target's back, sides, mechanism or supports, other than the surfaces that are exposed when the target is viewed directly from the front. Targets should be positioned as close as practicable to the bullet catcher, backstop, side backstop, or mobile bullet catcher, so that any splatter and or ricochet will be captured.
- 4.57 Where steel targets are to be engaged at close distances (20 meters or less), the surface of the steel targets must be free from any type of indentation or deformation that could cause an unpredicted ricochet or backsplash. The surface of the plate should be flat and not have weld elements protruding. If required for fixing, round-head coach bolts that are near flush to the surface can be used

so that splatter and/or ricochet are captured by the plate. All attachment points must be on the rear of the target or hidden behind support/screening materials. Attachment points joined to the target must not affect the temper or hardness of the material through excess heat. Any supporting structures for the target (e.g. a hanging steel plate) should be positioned outside of the cone of fire or be shaped to direct ricochet into the bullet catcher, backstop, side backstop, or mobile bullet catcher. If not, then it is to be clad so as not to induce backsplash, splatter and/or ricochet. Shrouds may be required to capture splatter and/or ricochet.

- 4.58 Steel targets engaged at long distances (greater than 100 metres) where backsplash and splatter do not create a risk to participants then the ground impact surface dimension can be applied to capture ricochet (see table 5.1).
- 4.59 Grades and thickness of steel may be calculated based on the projectile velocity, impact energy, firearm and ammunition used for the specific shooting activity

to be conducted. Abrasive Resistant (AR) steel with a Brinell hardness (HB) of no less than 450 is suitble for most uses.

4.60 Range standing orders may include any additional measures deemed necessary by the shooting range operatorcontrol for the safe engagement of steel targets if used on a range.

## Steel target shrouds

4.61 Steel target shrouds may be required on ranges where steel targets are used to capture splatter and/or ricochet. For Pistol New Zealand pistol shooting activities where steel target shrouds are used the provisions of the recognised Pistol New Zealand Steel Target Safe Use Guide for pistol shooting are to be used. Shrouds are to cover an angle of 20 degrees front and rear of the target. Shrouds can be made from any material that will capture splatter and/or ricochet and not introduce a hard target. Range standing orders may include additional control measures required for the safe engagement of steel targets.





# Section 5 Shooting range danger areas, signage and flags



## Danger area definition

- 5.1 The range danger area is the space where there may be a risk to people, equipment or property from the discharge of a properly aimed shot on a specified bearing (range axis/direction of fire) or within a specified arc of fire.
- 5.2 A range (including the range danger area) is designed to cater for a correctly aimed shot fired within the approved cone of fire at a target placed in accordance with range standing orders. A range danger area is not designed to cater for a shot deliberately or accidentally fired in breach of range discipline or range standing orders.

## Shooting range danger area

5.3 The dimensions and shape of the range danger area(s) are produced by application of an ammunition danger area template. This section contains dimensions and examples of ammunition danger area templates. Range danger area design depends on factors including the external ballistic characteristics of the ammunition, range construction (site and design), the shooting activities (respective shooting disciplines), and the cone of fire. It also depends on the safe management of these activities by the officer on duty and compliance with range standing orders. A range danger area decision flowchart is contained in figure 5.1.

# Effect of significant topographic features on shooting range danger areas

5.4 The location of significant topographic features will determine the type of range danger area to be applied to the range. The location and dimensions of significant topographic features will determine if the range is an reduced danger area or no danger area range.

## Full danger area range

5.5 A full danger area range is an outdoor range where the maximum distance of the danger area is limited only by the angle of departure (or quadrant elevation) of the firearm, the skill of the shooter and use of the correct ammunition danger area template (see table 5.1).

# Cone of fire is not captured by an artificial structure or topographic feature

5.6 On outdoor shooting ranges where the cone of fire is not captured by an artificial structure or topographic feature, then a full danger area range must be established. However, where there is not sufficient land available to establish a full danger area range it may be possible to apply the reduced danger area criteria described in paragraph 5.7 of this section.

A range and range danger area is designed to cater for a correctly aimed shot fired within the approved cone of fire at a target placed in accordance with range standing orders.



Range danger area design depends on factors including the external ballistic characteristics of the ammunition, range construction, the shooting activity and the approved cone of fire.

## **Range Danger Area Decision Flowchart**





## Design and application of an ammunition danger area template

Ammunition danger area templates can either be produced by deterministic or probabilistic safety analysis methods recognised by Police. Table 5.1 shows deterministic ammunition danger area template dimensions by firearm type.

AMMUNITION DANGER AREA TEMPLATE (ADAT) DIMENSIONS											
Template	Suitable Firearms	Maximum Distance (m)	Opening Ricochet Angle (mils/ deg)	Ricochet Distance (Ground) (m)	Ricochet Distance (Hard) (m)	Ricochet Closing Angle (mils/deg)	Air Danger Height (ft/m) AGL	Backsplash Safety Distance Ground / Hard (m)			
T1	Rimfire rifle and pistols	1400	270 mils (15°)	175	350	800 mils/45°	500 ft/ 150 m				
T2	Centrefire Pistol up to .50 cal	2000	530 mils (30°)	250	500	800 mils/45°	500 ft/ 150 m	10 Ground 20 Hard			
Т3	Muzzle loading and percussion rifles	2000	530 mils (30°)	250	500	800 mils/45°	500 ft/ 150 m	(101 11/12/13)			
Τ4	Centrefire Rifles up to .223 inch /5.56 mm (See Note 5)	2000	530 mils (30°)	250	500	800 mils/45°	500 ft/ 150 m	15 Ground			
Τ5	Centrefire Rifles up to .223 inch /5.56 mm (See Note 6)	2500	530 mils (30°)	350	650	800 mils/45°	500 ft/ 150 m	(for T4/T5)			
Т6	Centrefire Rifles up to 8mm (.308 inch / 7.62 mm) (See Note 7)	2900	530 mils (30°)	400	800	800 mils/45°	500 ft/ 150 m	22 Ground 50 Hard			
Τ7	Centrefire rifle .338 inch	3700	530 mils (30°)	450	900	800 mils/45°	500 ft/ 150 m	22 Ground 300 Hard			
Т8	Centrefire Rifle .50 inch	5200	530 mils (30°)	650	1300	800 mils/45°	3000 ft/ 1000m	120 Ground 350 Hard			

#### Notes:

- 1. The following notes explain how key dimensions are calculated in the table above.
- Backsplash distance is not the minimum engagement distance. Minimum engagement distance is determined by the club or association shooting discipline. Consideration should be given that any person within a backsplash safety distance is wearing personal protective equipment, e.g. eye protection. Applying a reduced engagement distance for .338 inch and .50 inch engaging hard target is not recommended.
- 3. When describing a danger area within range standing orders, the shooting range operator is to display the full danger area as detailed in this table to scale on the respective map, then illustrate within the templated area the limit of the reduced danger area for the range.

- 4. T4 is to be used for firearms groups that fit within .223 inch/5.56 mm firing ammunition up to 55 grains.
- T5 is to be used for firearms groups that fit within .223 inch/5.56 mm firing ammunition > 55 grains up to 69 grains.
- 6. T6 is to be used for firearms groups that fit within the .308 inch/7.62 mm (up to 8 mm) firing ammunition >69 grains.
- Where a one-time use or field shooting range includes a hard impact surface (e.g. rocks, steel, etc.) at less than 30 deg and within the CofF then the air danger height should be increased to:
  - a. 1000 ft for T1 to T5
  - b. 1500 ft for T6
  - c. 3000 ft for T7 and T8.

Table 5.1 – Ammunition danger area template dimensions

# Cone of fire is captured by an artificial structure or topographic feature

- 5.7 On outdoor shooting ranges where the cone of fire is captured by the slope of an artificial structure or topographic feature:
  - a. Where there is a slope angle of less than 56 degrees ricochet is to be considered and managed.
  - b. Where the slope angle is 56 degrees or greater the danger area is cut off at the point where the cone of fire intersects the slope establishing a reduced danger area range (see figures 5.2 and 53).

## Reduced danger area range

5.8 A reduced danger area range is an outdoor range for which the design requirements are to capture projectiles so that any ricochet remains within the reduced dimensions of the range danger area. The range danger area can be reduced by a significant topographic feature such as a hill. The topographic feature must be sufficiently high, wide and deep to capture all projectiles and ricochets. An ammunition danger area template is applied and a point on the feature is designated as the limit of the range danger area, such as a contour line or the crest-line of the feature. The criteria required to determine if the topographic feature meets the minimum requirements to reduce the dimensions of the range danger area include (See figures 5.4 and 5.5 for examples of how the reduced danger area criteria has been applied):

- Range tables for the approved ammunition to be used on the range. Range tables contain ballistic data specific to an ammunition type, and performance can be determined in order to calculate an overall danger area.
- b. The largest cone of fire approved for use on the range.
- c. Targets to include location, elevation (altitude),
   type (construction) and the approved target centre height.
- d. Firing line(s)/point(s) to include location, elevation (altitude) and the approved firing postures.
- e. The quadrant elevation (line of departure).
- f. The maximum ricochet height for the largest calibre of ammunition to be used.
- g. For backstops with a slope angle of less than 56 degrees there must be a minimum elevation difference of 100 metres from the highest target or target line to a point or contour line on the topographic feature used as the backstop, subject to Police approval.
- h. For backstops with a slope angle of 56 degrees or greater the minimum elevation difference may be reduced to 50 metres, subject to Police approval.



Figure 5.2 – CofF captured by a topographic feature with a slope greater than 56 deg



Figure 5.3 – CofF captured by a topographic feature



Figure – 5.4: Manual application of an ADAT to produce a scale diagram of the range danger area. The land boundary in indicated in green and the reduced danger applied in red



Figure – 5.5: Electronic application of an ADAT to produce a scale diagram of the range danger using the Microsoft PowerPoint software application

### Managing pop-over

- 5.9 Where high-velocity centre-fire rifle ammunition is used, `pop-over' must be prevented from exiting the active range area by either:
  - a. Constructing a canopy over the target line.
  - b. Applying a 100 metre danger area to the sides and rear of the range (see figure 5.6).
  - c. Achieving a backstop slope angle of no less than 56 degrees.
- 5.10 A range that has pop-over applied is described as a reduced danger area range with pop-over.
- 5.11 If a canopy is used, it must be positioned to cover the full width and depth of the bullet catcher. Where the canopy is of timber construction the rear half of the underside must be lined with mild steel at least 5 mm thick across the full width of the canopy. The sides of the canopy must be impenetrable to ricochet, and any debris ejected from the bullet catcher, and are typically constructed of brick, block or timber. Other materials such as concrete may be used provided that they contain the pop-over, are weather-resistant and are low maintenance, noting that the rear half of the canopy underside will take most of the vertical ricochet. The leading face of the canopy and supporting walls must be clad to prevent backsplash.

#### No danger area range

- 5.12 A no danger area range is where the range is designed to capture all projectiles and any ricochet, backsplash or splatter within the active range area. Factors that must be considered in order to establish a no danger area range include:
  - a. Minimum acceptable dimensions of the backstop including the correct slope angle,

- b. Maximum firing distance,
- c. Type of firearm and calibre,
- d. Cone of fire to be applied,
- e. Type of shooting activity,
- f. Type of target to be engaged,
- g. Type of shooting position to be adopted, and
- h. Where high-velocity ammunition is used, a canopy should be considered.
- i. Consideration of maximum ricochet height is not required on a no danger area range.

# Control of access to the range and danger area

- 5.13 The applicant when submitting the application for certification of a shooting range is required to detail in the range standing orders how control of the shooting range and danger area will be maintained while shooting activities are being conducted.
- 5.14 If projectiles land in any place outside of the range danger area the shooting range operator must immediately cease shooting activities on the range and investigate the cause. If any potential deficiencies in range design or construction are identified, the shooting range operator must engage a shooting range inspector for advice. The shooting range operator must remedy any faults identified by the shooting range inspector. Refer to section 7 for provisions of range closure.

### Impact surfaces

5.15 Impact surfaces are all surfaces within the cone of fire that are likely to be struck. Impact surfaces are categorised listed in the glossary to this manual.



Target Line



## Effect of trees in shooting range danger areas

5.16 Heavy tree cover in a range danger area or on top of a backstop may be desirable for an outdoor range for aesthetics or noise reduction. However, trees do not influence the dimensions of the danger area or increase the height of a backstop and may induce ricochet if struck.

# Activity inside a shooting range danger area managing the risk

- 5.17 The officer on duty must stop all firing immediately if unauthorised people enter the shooting range danger area.
- 5.18 The range perimeter danger signs serve to attract the attention of people in the area, e.g. hunters, farm workers and contractors, who could unknowingly enter the range danger area.

## Determining a shooting range danger area

5.19 The range danger area is determined by applying the correct ammunition danger area template (1:50,000 scale or 1:25,000 scale) from the firing point/ line along the range axis (direction of fire) on a topographic map (1:50,000 scale or 1:25,000 scale) of the range location. The outline of the ammunition danger area template is traced onto the map. If hard impact surfaces at less than 30 degrees and are within the cone of fire, then the hard impact surface dimension is to be applied. Where steel targets are used, the hard impact surface dimension may not be required when applying the ammunition danger area template, in accordance with range standing orders. This procedure will produce a range danger area for the relevant ammunition type, at a given cone of fire, with a restricted angle of departure (QE), over a single arc of fire. See table 5.2 for an overview of the steps required to determine a range danger area and figure 5.7 for a process flowchart.

## Reduction in dimensions of shooting range danger areas

5.20 The dimensions of shooting range danger areas may be reduced by following the requirements described in this manual. Shooting range operators must not reduce a shooting range danger area for the sake of convenience.

# Design, construction and application of an ammunition danger area template

5.21 The ammunition danger area template must be relevant to the types of firearms and ammunition to be used on the range and must reflect a thorough understanding of all types of shooting activities to be conducted on the range. This section includes guidance on the design, construction and application of a ammunition danger area template including examples of various templates. Scale diagrams of templates T1 to T8 (drawn to 1:50,000 scale) are available in figures 5.9 - 5.11 and can be obtained at <u>Te Tari Püreke – Firearms Safety Authority website</u>. Alternatively, the ammunition danger area template for a specific shooting discipline can be obtained on request to the relevant national shooting organisation.

A 'no danger area' range is one designed to capture all projectiles and any ricochet, backsplash or splatter within the active range area.



All landowners who are affected by the operation of a shooting range including its assosciated danger area must consent to the use of their land as a shooting range before a shooting range can be certified.

	STEPS FOR DETERMINING A SHOOTING RANGE DANGER AREA										
STEP	ACTION	DETAILS									
	PREPARATION										
1	Identify the range location	- Obtain a 1:50,000 or 1:25,000 scale Topographic Map of the overall range location									
2	Identify type of shooting activity to be conducted on the range	- Obtain the correct ADAT required for the templating (the scale of the ADAT must match the scale of the map)									
3	Identify the boundary of the land approved for use as a shooting range	- Plot the boundary on the map									
	ONSITE										
4	Plot the individual range location on the map	<ul> <li>Walk the ground and familiarise yourself with the range layout and features</li> <li>Move to the furthest firing point/line on the range, position yourself in the centre facing the direction of fire and plot your location on the map as a NZTM grid reference</li> </ul>									
5	Plot the range axis (direction of fire)	<ul> <li>Ensure that you are positioned at the same GR in Step 4</li> <li>Single Arc of Fire: If using a Firing Point (FP), measure the range axis through the centre of the target line from the FP, this bearing should be at right angles to the target line (this will be a Magnetic Bearing (MB) if using a compass)</li> <li>Convert the MB to a Grid Bearing (GB) and plot the centre of arc (range axis) on the map, take the appropriate ADAT for the ammunition to be used (use largest calibre) and the type of surface (ground or hard), place the ADAT on the FP and align with the centre of arc (range axis)</li> <li>Visualise the range danger area to see if it fits within the land approved for the shooting activity</li> <li>Arc of Fire: If using a Firing Line (FL), measure range axis from the centre of the FL to the centre of the target line (this will be a MB if using a compass)</li> <li>Move to the furthest left firing position on the FL and measure the left of arc (to furthest left target), move to the furthest right firing position on the map, select the appropriate ADAT for the ammunition to be used (use largest calibre) and the type of surface (ground or hard), place the ADAT on the left end of the FL, align the spine of the ADAT with the left of arc and then move the ADAT to the right end of the FL, align the spine of the ADAT to the right of arc</li> <li>Visualise the range danger area to see if it fits within the land approved for the shooting activity</li> </ul>									
6	Select the correct ADAT – (from T1 to T8)	- Based on largest calibre to be fired - Approved CofF - Maximum angle of departure (QE) - Consider if a hard impact surface is to be engaged - Consider the ADH									
7	Manually apply the selected ADAT to the map	<ul> <li>Place the ADAT FP on the map GR and align the centre spine of the ADAT with the direction of fire GB plotted on the map</li> <li>If firing is to take place closer to the target line, the firing point on the ADAT is to be moved to the closest engagement distance and the range danger area re-assessed</li> </ul>									
8	Determine if the range is an FDA, RDA, NDA Range	<ul> <li>Identify any man-made or natural feature that could be used to safely reduce the danger area for the shooting activity</li> <li>To achieve RDA or NDA status, the approved CofF of the ADAT must be contained by the selected man-made or natural feature</li> <li>A NDA Range does not require a scale diagram of the range danger area, but does require a GB for the range axis (direction of fire)</li> </ul>									
9	Confirm range danger area	- Confirm that the range danger area is contained within the approved land boundary for the shooting activity									
10	Record all information (onsite)	- Grid References to the maximum/minimum firing point/line - GB for the range axis (direction of fire) - Grid References to selected backstop/natural feature/limit of reduced danger area									
	POST SITE VISIT										
11	Draw the scale diagram of the range danger area (single arc of fire)	<ul> <li>Draw the full ammunition danger area onto the map applying the correct ADAT</li> <li>Check and confirm the accuracy of all GRs and the GB</li> <li>Check and confirm the accuracy of the scale drawing</li> <li>Annotate the scale drawing with the key information including but not limited to the firing point, axis, left and right of arc</li> </ul>									
12	Include in RSOs	- Prepare the scale drawing of the range danger area for inclusion in RSOs									
Note	Field Shooting Range – Danger Area	<ul> <li>A field shooting range may require a firing box and an arc of fire for the respective shooting activity. This requires a more complex application of the ADAT. It may also require the application of a firing box using parallel arcs</li> </ul>									

## Table 5.2 – Steps required to determine a shooting range danger area



for the respective shooting activity. This requires a more complex application of the ADAT.

Figure 5.7 - Process flowchart - determining a shooting range danger area

## Ammunition danger area design explanation

- Line A B. Line A B is a straight line between the firearm and the target, which has been extended to reach the maximum length of the ammunition danger area template. The maximum length of the ammunition danger area template is either:
  - a. the maximum possible range of the projectile, or
  - b. the maximum possible range of the projectile based on the angle of departure (QE).
- Line A C. Line A C is the cone of fire angle applied to Line A - B. Line A - C is the same length as Line A- B. The angle between Line A - B and Line A - C will vary depending on the cone of fire applied.
- Line A D. Line A D is the opening ricochet angle and, unless empirical data exists to the contrary, it is always to be at an angle of 30 deg (530 mils) to Line A – C.
- Line C E. Line C E is the closing ricochet angle and, unless empirical data exists to the contrary, it is always to be at an angle of 45 deg (800mils) to Line A – C.

 Line E – D. Line E – D is the ricochet boundary. Ricochet distance between line A – C and E - D is recommended to be one eighth of the maximum distance for ground surfaces (see Note 3) or one quarter for hard surface (see Note 4).

#### Notes:

- Completion of the Ammunition Danger Area Template. Lines A – C, B – C, A – D, C – E and D – E are mirrored to the right of Line A – B to complete the ammunition danger area template.
- Ground impact surfaces. Ground impact surfaces includes all surfaces other than hard impact surfaces. The composition and depth of the ground (including top soil and vegetation) in some geographic regions may allow for the reduction of the ricochet angle if it is deemed safe to do so by the SRO.
- 3. Hard impact surfaces. Hard impact surfaces includes, but are not limited to concrete, rock, steel, water and frozen surfaces.



Figure 5.8 – Example of the components of anammunition danger area template

Note 1: Scale diagrams of all ammumition danger area templates can be found at Te Tari Pūreke – Firearms Safety Authority website. These diagrams can be printed to scale and photocopied onto an A4 transparent plastic film (also known as foils or transparencies). **Note 2:** All ADATs are drawn with an angle of departure (quadrant elevation) of <150 mils and cone of fire 20 mils (1.125 deg).



Figure 5.9 - 1:25,000 T1 - T2 - T3 -T4 Templates (Not to scale)





Figure 5.10 - 1:25,000 T5 - T6 Templates (Not to scale)



Figure 5.11 - 1:25,000 T7 - T8 Templates (Not to scale)



Figure 5.12 - NZCTA Shotgun skeet range template

![](_page_57_Figure_2.jpeg)

Figure 5.13 - NZCTA Shotgun trap range template

## Application of an ammunition danger area template

- The application of an ammunition danger area template requires a skill level which can be achieved through training and practice. The purpose of applying a template is to produce a scale diagram on a topographic map of the shooting range danger area. This diagram is included in the shooting range standing orders. Police have provided a training video on how to apply an ammunition danger area template at the clubs and ranges webpage at <u>Te Tari Pureke –</u> Firearms Safety Authority website.
- 2. **Types of danger area applications.** There are three main types of application that are explained in the training videos, they are:
  - a. **Danger area 1** A firing point with a single arc of fire (the range axis/direction of fire)
  - b. **Danger area 2** A firing line with a left and right of arc
  - c. **Danger area 3** A firing box with a left and right of arc (applying the parallel bearings technique).
- There are other types of danger areas that can be applied for specific shooting activities where the application of the template is more complex. The Police Clubs and Ranges Team can provide advice for these situations.
- Range site survey. Before practically applying a template to the map, the SRO requires information

which has to be gathered during a range site survey (sometimes referred to as a ground reconnaissance). The following information is required and must be recorded accurately:

- a. The grid reference(s) of the firing point/line/box
- b. A grid bearing for the direction of fire (range axis)
- c. A grid bearing for the left and right of arc (where applicable)
- d. The boundary of the land approved for the use as a shooting range (only the section of the boundary relevant to the shooting range location if a large property).
- Reduce danger areas. The grid reference of the feature to be used for a reduced danger area including any relevant information, e.g. distance from the shooting range, brief description of the feature.

**Note:** It is necessary to take the relevant template on the survey so that it can be practically applied for map to ground assessment of the planned range danger area.

6. No danger area ranges. Although there is no requirement to apply a template for a no danger area range. A template can be overlayed for the purpose of risk management to assess the impact of a failed range feature which may cause the no danger area criteria to be compromised.

![](_page_58_Figure_0.jpeg)

Figure 5.14 Example of a firing line with a left and right of arc

Figure 5.15 Example of template design for field shooting

![](_page_58_Figure_3.jpeg)

![](_page_58_Figure_4.jpeg)

Example application of an ammunition danger area template from a firing box using parallel bearings with a maximum left and right of arc applied Figure 5.17 Example of a completed firing box using parallel bearings with maximum left and right of arcs

# Note: A video explaining the application of an ammunition danger area template can be found at the clubs and ranges webpage at <u>Te Tari Pūreke – Firearms Safety Authority website</u>

## Shooting range signage

5.22 Range and danger area signage is required for all ranges except as set out in paragraph 5.26. Signs must be of durable construction to resist weathering. The signs warn people approaching the shooting range site and the range danger area of the risks associated with entering it.

### Shooting range entrance signage

5.23 There must be a sign at all commonly-used access points to a shooting range. (during operation for one-time use, field shooting and sporting clay ranges). It must be large and clearly visible, and clearly identify the site as a shooting range. It must contain the range or range complex name, contact details of the shooting range operator contact information (e.g. phone number, website or email address) and a warning that the person is entering a shooting range. If a flag is used at a range, there must be a sign by the flag explaining what a raised flag means and clearly stating any restrictions on access.

### Shooting range danger area signs

- 5.24 There must be signs positioned around the perimeter of the overall range danger area to identify the external boundary of the range. The intention of these signs is to alert people of the range and range danger area boundaries. Signs must face outwards away from the range danger area and spaced at intervals so they are clearly visible to anyone who might approach the range. They must clearly warn people not to enter the range danger area, with wording such as 'DANGER, Firing Range, Keep Out'. Range danger area signs must be visible at all times and must not be obscured by brush or vegetation. Perimeter signs should be checked periodically as part of the range maintenance plan to ensure they are in good order and all graphics and wording remain legible.
- 5.25 Range danger area signs must always be readily visible from 100 m away. They should be of a conspicuous colour scheme, and at least 400 x 300 mm big. They should be checked periodically as part of the range maintenance plan to ensure they remain legible and not obscured by vegetation. If a range danger area sign is found to be in a poor state of repair or non-legible, it must be replaced or refurbished as soon as practicable.

### Alternatives to range danger area signs

5.26 If fixed danger area signs are not practicable for use on one-time use or field shooting ranges, portable range danger area signage must be placed at all known vehicle or foot traffic access points into the range danger area. 5.27 Where portable range danger area signage is not practicable all reasonable measures must be taken to reduce the risk of unauthorised entry. Evidence of these control measures will be required for certification of one-time use or field shooting ranges, such as an assurance from the landowner that access to the property is restricted to participants of the approved shooting activity. If signs are not to be used this must be included in range standing orders for the purpose of certification.

### Range in use flags

- 5.28 Each range or multiple ranges at one site must fly a large **RED** warning flag when in use. The flag must be of a size and condition to stand out and be visible from the access point to the range. The flag must be flown from a flagpole at a height that can be easily seen. The dimension for the flag should be 600 mm x 1200 mm. Indoor ranges are not required to display a range flag but must control entry into an active range area by signage, a locked access door (secured from the inside), warning lights (operation controlled from the inside) or a combination of these.
- 5.29 The flagpole needs to be in a prominent position, clearly visible to those approaching the range. If there is more than one entry point to the range and they are not visible to each other, then a flagpole is required at each entry point. The location and number of flagpoles depends on the design and layout of the range or multiple ranges at one site. Flagpoles must not be placed in a location that poses a hazard to anyone operating the flags, e.g. not on a backstop where, due to the presence of an adjacent range, the flag operator would be exposed to fire from that range.
- 5.30 The range or site with multiple ranges warning flag(s) for individual ranges are to be raised before a shooting activity begins and lowered when it ends. If the range is used for night firing activities, the red flag(s) are to be replaced by suitably visible red flashing lights. There must be signage at the location of each range or multiple range site warning flags that explains what a raised flag means and clearly state the restrictions on access.
- 5.31 Depending on the design and layout of the range, a range flag may be required for each individual range where the range is part of a larger site with multiple ranges. This may extend to each bay where multiple shooting bays form part of the range. Range flags must clearly identify which ranges or bay is in use at any given time. Range flags for individual ranges are to be raised before the shooting activity begins and lowered when it ends.

![](_page_60_Picture_0.jpeg)

The officer on duty must stop all firing immediately when encroachment into the shooting range danger area has been identified.

## Alternative range in use flag requirements

- 5.32 Some shooting disciplines such as skeet and trapshooting may use a system of red and green signal flags and/ or light systems. The correct operation of these flags or light systems must be explained in their respective range standing orders and/or match rules.
- 5.33 One-time use ranges (e.g. sporting clay field shooting ranges) generally do not have the infrastructure to establish flagpoles or flag stations and therefore are not required to display warning flags. In lieu of a warning flag, a portable warning sign (a sandwich board style or a sign fit for purpose) must be placed at the main access point to the location of the shooting activity. The range standing orders must also describe procedures for controlling other potential access points into the shooting range danger area.

# Wind flags

- 5.34 The location of any wind flags used on a range must not interfere with shooters or obscure the view of the active range area from the shooters or officers on duty.
- 5.35 Wind flags must be of a different shape and colour to all warning flags in use on the range. This is to avoid confusion over their meaning.

![](_page_60_Picture_8.jpeg)

![](_page_60_Picture_9.jpeg)

![](_page_60_Picture_10.jpeg)

![](_page_60_Picture_11.jpeg)

![](_page_61_Picture_0.jpeg)

# Section 6 Range standing orders

![](_page_62_Picture_1.jpeg)

## Introduction

6.1 Range standing orders are a document that describes the design of the shooting range and sets out its operational detail and conditions of use. They are required to ensure that all necessary precautions are taken to prevent accidents to range users and prevent danger to the public. Range standing orders must be approved by Police.

## Responsibility for range standing orders

- 6.2 Range standing orders are the responsibility of the shooting range operator. Range standing orders can be written for a single range or where multiple ranges are located on one site and operated by the same range operator, they can be written for the complete site with each range included within the orders. The shooting range operator must comply with the range standing orders for the range.
- 6.3 The range standing orders may describe any additional persons who are required for the safe operation of the range. Where an approved shooting activity or organised shooting competition is being conducted, the match or competition rules should also detail range safety roles required for the safe conduct of the activity/competition.

## **Risk assessment**

6.4 A shooting range operator may have obligations under the Health and Safety at Work Act 2015 as a person conducting a business or undertaking (PCBU). In such cases, it is recommended that a site-specific risk assessment is conducted. WorkSafe New Zealand produces guidance on the responsibilities of a person conducting a business or undertaking (PCBU's).

# Notification to Police

- 6.5 An application for certification or renewal of certification of a shooting range must be accompanied by a copy of its range standing orders. They will be reviewed for content and compliance by Police.
- 6.6 The shooting range operator must have prior approval from Police before making any change to the range standing orders that will or may affect the ballistic characteristics, operation, or safety of the range.

# Notification to all range users

- 6.7 The shooting range operator must make the current version of the range standing orders accessible to all range users, whether in electronic or hard copy form, and advise them of any approved amendments to the range standing orders. It is recommended that the shooting range operator displays the current version of the range standing orders on a noticeboard and website (if applicable).
- 6.8 All persons trained as officers on duty are to routinely review range standing orders to refresh themselves on safe range operation which will include any approved amendments.

## Inability of a shooter to achieve and maintain the cone of fire

- 6.9 The inability of a shooter to achieve and maintain the approved cone of fire is a risk as projectiles may escape the range danger area. Range standing orders must set out how the shooting range operator is to validate and monitor the ability of a shooter to achieve and maintain the approved cone of fire, and the corrective actions if a shooter is unable to do so.
- 6.10 Instructions for the management of unlicensed or inexperienced shooters (e.g. a person lacking confidence in their shooting ability or is assessed by the officer on duty as lacking sufficient experience in the respective shooting activity), is to be included in range standing orders. When an unlicensed or inexperienced shooter is permitted to shoot on a range, the appropriate minimum shooting distance (as designated by the officer on duty) must be used to ensure the approved cone of fire for the range is not compromised. Supervision of the shooter must be one on one when considered appropriate by the officer on duty. However, this can also be managed by applying practical control measures to ensure the safe conduct of the shooting activity in accordance with range standing orders. The decision to progress back to longer firing distances is at the discretion of the officer on duty.

# Test firing

6.11 Instructions for the management of test firing should be included in range standing orders. An application to conduct test firing should be made to the shooting range operator and approved on a case-by-case basis. There may be various reasons for a firearm to be test fired and the shooting range operator must be satisfied that any test firing can be conducted on the range in a safe manner for all participants and the public. This may require proof that a firearm or ammunition type is fit for purpose before test firing is approved by the shooting range operator.

## Eye and hearing protection

6.12 All range users in close proximity to the shooting activity are to wear appropriate eye and hearing protection in accordance with the rules of the shooting activity being conducted. Specific rules for the use of eye and hearing protection must be detailed in the range standing orders.

## One-time use shooting ranges

6.13 Range standing orders for a one-time use or field shooting range need cover only the headings relevant to the safe operation and management of the range. Table 6.1 in this section lists the standard headings that must be included and also lists the headings that are an exception and not required for one-time use or field shooting ranges.

## Range standing orders - contents

- 6.14 A list of standard headings is included at the end of this section. Some of these headings must be included in the range standing orders. Other headings relevant to specific shooting disciplines are optional. Headings are explained here:
- 1 Range or site name
- 2 Names of individual ranges (if applicable)
- 3 **RSOs date** The date RSOs were authorised (including any subsequent approved amended versions)

#### 4 Introduction

- a. Information about the range,
- b. The legal title of the land on which the range is located, and any associated land affected by the range danger area (if different),
- c. Name of the landowner(s) approving the use of their land as a shooting range, and
- d. Hours of operation.

### 5 Responsibilities

- a. Name of the SRO (who is responsible for the overall safe operation of the range), and
- b. The person in charge of the day-to-day administration, management, and maintenance of the range, if not the SRO.

- 6 Compliance with RSOs
  - a. Statement directing that all range users must comply with RSOs, and
  - b. Describes the consequence of non-compliance with RSOs.

#### 7 Range location –

- a. Physical street address of the range, and
- b. NZTM map sheet number and grid reference.

#### 8 Approved range users and priority of use -

a. List approved range users/organisations in their order of priority.

#### 9 Warning flags and danger signs -

- a. Locations of warning flags, danger signs and their use,
- b. Flag locations may be included within the Google Earth image (or similar diagram).
- 10 Description of individual ranges restrictions and conditions of use
  - Description of all ranges (in numerical order) by name or number, firing distance, and type of range danger area, e.g., NDA/RDA/FDA,
  - b. Where a range is designated a FDA or RDA range, a scale map of the range danger area is to be included as an annex (a scale map is not required for a NDA range),
  - c. For RDA ranges, the limitation of the danger area is to be clearly defined, and
  - d. The range axis (direction of fire) is also to be clearly indicated in the scale diagram.
  - e. Conditions of use (subheading) are to be listed after each individual range and are to include:
    - Restrictions on the ammunition approved for use on the range. This can be expressed as up to and including the maximum calibre, cartridge, muzzle velocity or muzzle energy, or a combination, e.g.,
      - (a) pistols up to and including .50 calibre with a MV no greater than 1600 fps (488 m/s).
      - (b) Rifles up to and including 8 mm with a muzzle energy no greater than 3800 ft-lb (5152 J).
    - (2) Any conditions for the coordination of range activities, e.g., range 1 must be closed when range 2 is in operation.
- 11 **Range safety roles** Describe the arrangements for officers on duty and any other persons with a designated role in ensuring range safety:

- a. RSOs must state that an officer is on duty for each individual range when in use,
- b. The OD must hold a firearms licence and be appropriately trained in shooting range safety management,
- c. The SRO must keep a record for each year ending 30 June of all persons who have been trained and have performed the role of OD, including their name and firearms licence number and evidence of what training was delivered. The record must be retained for two years after the end of the year to which the record relates.

#### 12 Range safety rules -

- a. Generic safety rules for the use of the range, and
- Any specific requirements before, during and after shooting.
- c. Approved shooting activities, and
- d. Developed shooting activities must be reviewed for approval by the shooting range operator before inclusion in RSOs. Police must be notified of any proposed amendment to RSOs for review of the current conditions of certification and approval.
- 13. New ammunition use If a new ammunition type is proposed for use on the range, it must be approved by the SRO before inclusion in RSOs. Police must be notified of any proposed amendment to RSOs for review of the current conditions of certification and approval.
- 14 Targets
  - a. Approved soft and hard target types to be used,
  - b. The correct placement of targets,
  - c. Approved target centre heights, and
  - d. The procedure for approval and use of new targets and target systems.
- 15 **Steel targets** instructions for the use of approved steel targets
- 16 Moving targets instructions for the operation of moving targets
- 17 Minimum safe engagement distances List the minimum safe engagement distances by calibre, target type and composition of the backstop/bullet catcher material
- 18 **Eye and hearing protection** –Rules for the use of eye and hearing protection.

#### 19 Medical and emergency –

- a. Location of the first aid/medical kit, and
- A suitable method (cell phone/landline/radio) to contact emergency services.

#### 20 Accident/incident procedure -

- a. Procedure in case of an accident /incident on the range not involving a firearm or ammunition
- b. Procedure in case of an accident /incident on the range involving a firearm or ammunition - Note: Section 58 of the Arms Act 1983 - Reporting of injuries caused by firearms, airguns, pistols, or restricted weapons, states that Every person who causes bodily injury to or the death of any person by the use of a firearm, airgun, pistol, or restricted weapon, shall, as soon as reasonably practicable, report the incident in person—

(a) at the nearest Police station; or

(b) to a member of the Police.

#### 21 Fire precautions and procedures -

- a. Evacuation procedure in the event of a fire,
- b. Location of onsite fire alarms and equipment, and
- c. Any relevant seasonal fire restrictions that must be complied with.
- 22 **Range clearance** The procedure for clearance of the range at the completion of the shooting activity.
- 23 Unauthorised access and/or use of the range Procedure for managing any unauthorised access and/ or use of the range.
- 24 **Cone(s) of fire** List the approved cone(s) of fire for each range.
- 25 Inability of a shooter to achieve and maintain cone of fire – describe the procedure of how the shooting range operator validates and monitors the ability of a shooter to achieve and maintain the approved cone of fire, and the corrective actions if a shooter is unable to do so.

#### 26 Unlicensed or inexperienced shooters -

Describe the procedure(s) used to manage an unlicensed or inexperienced shooter on the shooting range.

27 Test firing -

Describe the procedure(s) used to approve and manage test firing of firearms and ammunition.

#### 28 Air danger height (ADH) -

- a. Approved ADHs for the range,
- b. The procedure for aircraft intrusion over the range danger area, and
- c. Any procedure required by agreement with the local aerodrome(s) or CAA for use of the range (if applicable).

#### 29 Range maintenance plan -

a. A schedule of regular maintenance checks of the range(s) e.g. detailing the criteria for refurbishment of the bullet catcher fill material (if applicable), and

- For the purpose of certification, the standard of the b. range maintenance will be assessed against the range maintenance plan.
- 30 Children (minors) Rules for supervision of children (minors) on the range.
- 31 Health and hygiene Rules for health and hygiene procedures (e.g. washing hands before handling food after shooting).
- Domestic animals Rules for allowing domestic animals 32 on the range.
- 33 Additional headings Any other information necessary for inclusion in the RSOs for the safe management and operation of the range.
- 34 Amendment to RSOs Procedure for amendments to these RSOs.
- 35 Authorisation of RSOs The RSOs are to be authorised by the shooting range operator, e.g. by date
- 36 Distribution list All range users and associated organisations

Annexes - Additional annexes (if required to supplement the main body)

- Range layout A Google Earth or Topo50 map Α image indicating a plan view of the range(s) including flag locations.
- В Range danger area - A scale drawing illustrating the FDA/RDA including the land boundary

permitted for use as a shooting range (not required for a NDA range).

- С Additional shooting organisations - Where more than one shooting organisation uses the range, specific rules for their discipline can be added as an annex. They must not contradict these RSOs. The annex must be reviewed and approved for inclusion in these RSOs.
- D Any other relevant information - Information, tables, images etc that are more suited to be included as an annex to reduce clutter in the main body of the orders (e.g. table of equivalency).

## Individual shooting range summary sheet

6.15 It is recommended that each shooting range has a sign listing a summary of the relevant conditions specific to that range, e.g. an extract from range standing orders listing approved firearms and calibres (see figure 6.1). These signs are to provide a brief summary of the operating conditions to all users of that range. They do not remove the requirement to have the current version of the range standing orders accessible to all range users.

## Range standing orders - standard headings

6.16 The table below lists the standard headings for range standing orders. Shooting range operators may include more information as required, especially in relation to specific shooting disciplines.

![](_page_65_Picture_19.jpeg)

#### Restrictions and conditions of use:

- No aerial targets.
- Down-range shooting only between 50 metre firing line and 25 metre target fixtures. No targets placed at left side berm between 50 metre firing point and 25 metre target fixtures
- Beyond 25 metre target line the range can be shot left and right into side berms out to a distance of 10 metres.
- Steel targets shall only be used beyond the 25 metre target fixtures No steel setup within 7 metres (5 metres for CAS) of firing position (see Range Standing Orders 17).
- Bullet catchers (filled blue barrels) are required for all targets where bullet impact may strike within yellow 'no impact' areas or impact the ground from any firing position.
- Bullet catchers must cover cone-of-fire from every possible firing position (See Range Standing Orders 16.1 for details)

![](_page_65_Picture_27.jpeg)

#### Figure 6.1 - Example of RSOs individual range summary sheet

64

# Range standing orders – standard headings

## (Detailed information for each heading is contained in paragraph 6.14 of Section 6)

The table below lists the standard headings required in range standing orders (RSOs). Shooting range operators may include more information as required, especially in relation to specific shooting disciplines.

LEGEND	M = Must be included in the RSOs	M** = Must be included if applicable or f			Exception: This is not ired for one-time use Optional ield shooting ranges							
SERIAL	HEADING	N/A	Y	Ν	SE	RIAL	HEADING		N/A	Y	N	
1 <b>M</b>	Club / Range / Range complex name				23	м	Unauthorised access an use of the range	nd/or				
2 <b>M</b>	Range name				24	м	Cone(s) of Fire (CofF)					
3 <b>M</b>	RSOs date				25	м	Inability to achieve CofF					
4 <b>M</b>	Introduction				26	М	Un-licenced or inexperienced					
5 <b>M</b>	Responsibilities				27	м	Test firing					
6 <b>M</b>	Compliance with RSOs				2/	M**	Air danger beight (ADI	D				
7 <b>M</b>	Range location				28	M		-1)				
8 <b>M</b>	Approved range users and priority of use				29 M	Е	Range maintenance pla	an				
9 <b>M</b>	Warning flags – Danger signs				30		Children (Minors)					
10 <b>M</b>	Description of individual				31 <b>M</b>		Health and hygiene					
	ranges restrictions and conditions of use				32		Domestic animals					
11 <b>M</b>	Range safety roles				33		Additional headings (if required)					
12 <b>M</b>	Range safety rules				34	м	Amendment to RSOs					
13 <b>M</b>	Approved ammunition				35 I	м	Authorisation of RSOs					
14 <b>M</b> **	Targets				36	м	Distribution list					
15 <b>M</b>	Steel targets				Anı	nexes						
16 <b>M**</b>	Moving targets				(if r	equire	d to supplement the main	body)				
17 <b>M</b>	Minimum safe engagement distances				SE	RIAL	HEADING		N/A	Y	N	
18 <b>M</b>	Eye and hearing protection				AN	1	Range layout and locat	ion				
19 <b>M</b>	Medical and emergency				B№	1**	Range danger area					
20 <b>M</b>	Accident/Incident procedure				CM	1**	Additional shooting organisations					
21 <b>M</b>	Fire precautions and procedures				D		Any other relevant information					
22 <b>M</b>	Range clearance											

Table 6.1 - Range standing orders – standard headings

![](_page_67_Picture_0.jpeg)

# Section 7 Shooting range closure

![](_page_68_Figure_1.jpeg)

## Shooting range closure

7.1 A shooting range may be closed for a temporary period or closed permanently. Where a shooting range has been closed temporarily or permanently, the shooting range operator must take steps to clearly indicate that the shooting range is closed, e.g, range closed signage. For one-time use, field shooting and sporting clay ranges, practical measures are to be taken to indicate the range has ceased operations.

## **Temporary closure**

- 7.2 A shooting range operator may close a shooting range temporarily for the purpose of administration, scheduled maintenance, unplanned repair work or due to an adverse weather event such as flooding. The shooting range operator is not required to notify Police in such circumstances and may reopen the range when appropriate.
- 7.3 A shooting range operator must immediately cease operations on a range when they identify continued operations will endanger the safety of the public or range users. The shooting range operator must temporarily close the range until the circumstances are investigated and any remedial action is completed to ensure the safe operation of the range. The shooting range operator may reopen the range when it is confirmed safe to do so. If it can be confirmed that the safety of the public has been exposed to potential risk, e.g. projectile overshoot, then the shooting range operator must report the circumstances to Police.
- 7.4 Any individual using a range who considers the range unsafe must cease using it and report the circumstances as soon as practical to the shooting range operator or

member of the club executive committee. On receipt of this notification, the shooting range operator or club committee must close the range temporarily until they can validate the circumstances of the report. The shooting range operator or club committee may reopen the range when it is confirmed safe to do so.

- 7.5 Where a member of the public reports a shooting range to be unsafe, a member of Police constabulary may direct that the range(s) cease operation temporarily until the circumstances of the report can be investigated. The clubs and ranges team may be required to assist with the investigation. Police may direct that the range can reopen when it is confirmed safe to do so, or issue an improvement notice to remedy any condition(s) of certification that have not been met (refer to section 2 – Improvement Notice).
- 7.6 A member of Police conducting a regulatory shooting range inspection may issue an improvement notice where it is identified that a shooting range does not comply with or the conditions of certification have not been met. The conditions stated in the improvement notice may require the shooting range operator to temporarily cease operation until remedial action has been taken to ensure the safe operation of the range. If the shooting range operator does not cease operations Police may cancel certification (refer to section 2 Improvement Notice).
- 7.7 A member of Police may temporarily suspend the operations of a shooting range if the member is satisfied that the shooting range has failed to comply with an improvement notice (refer to section 2 Temporary suspension of a shooting range's operations).

![](_page_68_Picture_12.jpeg)

## **Permanent closure**

- 7.8 If a shooting range operator fails to comply with an improvement notice and the Police review during the period of the suspension notice, concludes that the range can no longer meet the conditions of certification, Police will cancel range certification.
- 7.9 Where the owner (or controlling authority) of the land, on which the range and/or danger area is situated, withdraws authority for the use of the land as a shooting range (e.g. if the lease or licence is terminated), the shooting range operator must inform Police and cease using the range when the authority has ended. If the shooting range operator is unable to obtain a new authority to use the land, then the range must cease operations. Police will review the situation and confirm that the range can no longer be operated

under the conditions of certification. Once confirmed, Police will cancel range certification

7.10 A shooting range operator may voluntarily surrender the certification of a shooting range by notifying Police. Police will review the notification and confirm the details for permanent closure of the shooting range with the shooting range operator. On confirmation, Police will cancel range certification

## Decommissioning

7.11 When a shooting range is to be decommissioned and closed permanently, Police will cancel the range certificate. All range signage and range structures should be removed to ensure there is no continued use of the shooting range by any person. Other remediation may be required by the landowner or occupier.

![](_page_69_Picture_7.jpeg)

![](_page_70_Picture_0.jpeg)

![](_page_71_Picture_0.jpeg)
# Section 8 Sighting-in that is not done on a range



# Sighting-in

8.1 Sighting-in that is done by an individual or a small group of individuals (but not a shooting club) on a one-off or occasional basis (e.g. before a hunting trip or duck-shooting season), does not have to be done on a range if it can be carried out safely, whether on private or public land with the permission of the landowner or respective controlling authority.

## Safety considerations

- 8.2 When sighting-in is not done on a range, the following safety considerations should be applied when selecting a suitable area:
  - a. Identify an area of land that you own, control or have permission to shoot on. It should be away from populated areas and selected so as not to endanger, frighten, or annoy members of the public, where there are no buildings or human activity. Buildings in the danger area that are not at risk of direct impact must be vacant of human activity, such as an implement shed.
  - b. Select a safe backstop within the area (this is critical). A large bank or hill immediately behind the target is recommended. Trees or vegetation without solid ground behind them are not a reliable backstop. The steeper the slope of the natural feature the better it reduces the potential for ricochet.
  - c. A rifle bullet can travel several kilometres even

after a ricochet, so the direction of fire should be oriented so that the fall of shot area extending beyond the target does not contain roads, dwellings, buildings or areas of human activity. Ideally the bank or hill (backstop) immediately behind the target should be high enough to contain direct impact and potential ricochets..

- Avoid hard or stony surfaces likely to cause a ricochet or backsplash. If a ricochet is heard when shooting, stop shooting and select a more suitable location.
- e. Select an area where you have control and full visibility of anyone entering the danger area. Avoid selecting backdrop areas where members of the public or people such as farm staff might enter the danger area without your knowledge Check for roads, tracks, access-ways or river flats where you don't have full visibility of the danger area.
- f. Select targets that will not create a ricochet or backsplash e.g. paper, soft timber or suitable steel targets (positioned correctly). Targets should be placed centrally at the base of the backstop (bank or hill) to ensure all bullets will be captured by the backstop.
- g. Avoid areas with livestock within the danger area.
- h. Ensure that everyone handles firearms safely and follows the seven rules of firearms safety in accordance with the Arms Code.
- 8.3 Areas set up for and routinely used by the public or a shooting club for sighting-in must be certified as a range.





Backstop

Range Floor

Shooting Stand

# Section 9 <u>Referenc</u>es and acknowledgements



### References

- 9.1 When developing this manual Police used for reference these shooting range manuals developed by national shooting organisations:
  - New Zealand Clay Target Association manual of range design, construction and inspection guidelines dated 28 November 2010.
  - b. New Zealand Deerstalkers Association manual of range design, construction and inspection guidelines dated 20 October 2005.
  - New Zealand Deerstalkers Association manual for outdoor hunting simulation dated 20 October 2005.
  - d. Pistol New Zealand range manual dated 1 June 2018.
  - e. Pistol New Zealand Steel Target Safe Use Guide for pistol shooting dated 1 November 2022.
  - f. Rules for Certification of Rifle Ranges for the National Rifle Association of New Zealand Fullbore Rifle Shooting amended 20 June 2022.
  - g. The National Rifle Association of New Zealand Rules for the Certification of No Danger Area Rifle Ranges amended 1 September 2022.
  - h. Target Shooting New Zealand range manual dated 1 September 2022.
  - i. New Zealand Black Powder Shooters Federation Inc, Manual of Range Design, Construction and Inspection Guidelines, 2000 Edition.
- 9.2 The above manuals contain additional information and guidance relating to target shooting in particular disciplines. For further information contact the relevant shooting organisation.
- 9.3 For detailed information on range design for specific shooting disciplines referenced in this section, it is

recommended that the respective source document be reviewed. Where information in a source document contradicts this manual, the Police shooting range manual is to take precedence. Police may approve the use of specific range design criteria that deviates from this manual where it is satisfied that any certification against the range design criteria will not impact the safe operation of the shooting range. The shooting range operator is responsible to ensure that all shooting activities will adhere to the conditions of that range certification.

- 9.4 When developing this manual the following international publications were used for reference:
  - a. UK Ministry of Defence: Defence Safety Authority, Defence Ordinance Munitions & Explosives Safety Regulator (2020) DSA 03.0ME, part 3, volume 2 – Defence code of practice and guidance notes for ranges.
  - b. Royal Canadian Mounted Police (2007) Range design and construction guidelines. The Canadian Firearms Centre, Canada, 2007.

## Acknowledgements

9.5 Police recognises Pistol New Zealand, the New Zealand Defence Force and the Range Certification Engagement Group for their contribution to the production of this manual. Topographic maps used in this manual have been sourced from the Land Information New Zealand Data Service licensed for reuse under CC BY 4.0. There is more information available on the LINZ website: www. linz.govt.nz/data/licensingand-using-data. Relevant parts of this document have been reviewed by the Weapons and Range Safety Branch of the New Zealand Army, and by Mr Frank Compton (Maj Retd) MBE, Range Safety Advisor and international subject matter expert.



#### **Range Certification Engagement Group**

9.6 Members of the range certification engagement group involved with the development of this manual are listed in the table below. Police is solely responsible for the content of this shooting range manual.

ORGANISATION	REPRESENTATIVE ON RCEG
Council of Licensed Firearms Owners	Marcus Griffin
Field Shooting Advisory Group	Nick Fisher
Firearms Safety Council of Aotearoa New Zealand	Joe Green
Gillice Practical Rifle Event	Simon Gillice
Gunsafe Firearms Safety and Education	Kerry Adams
New Zealand Clay Target Association	Hamish Wilson
New Zealand Deerstalkers Association	Bill O'Leary
New Zealand Game Animal Council, Federated Farmers of New Zealand, Professional Hunting Guides Association	Roger Duxfield
New Zealand Army Weapons and Range Safety Branch	Dale Stokes Kevin Hicks
New Zealand Police	Doug Puke Dale Stokes
National Rifle Association of New Zealand	John Snowden
Pistol New Zealand	Peter Miles
Target Shooting New Zealand	Ross Mason

Table 9.1 - Range certification engagement group

9.6 The following links provide shooting range operators with specific environmental planning considerations when establishing or developing a shooting range:

#### Lead exposure

<u>refer to Ministry of Health NZ</u> <u>https://www.health.govt.nz/your-health/conditions-and-treatments/diseases-and-illnesses/lead-poisoning</u>

#### Environmental noise

<u>refer to Ministry of Health NZ</u> <u>https://www.health.govt.nz/your-health/healthy-living/environmentalhealth/noise</u>

#### **Environmental considerations**

<u>refer to Resource Management Act 1991</u> https://environment.govt.nz/acts-and-regulations/acts/resource-management-act-1991

Guidance on managing contamination at shooting ranges

https://www.epa.vic.gov.au/for-business/find-a-topic/manage-contamination-shooting-ranges

#### **Auckland Regional Public Health Service**

https://www.arphs.health.nz/assets/Uploads/Resources/Healthy-environments/Minimising-Lead-Exposure-in-Shooting-Club-Ranges-v1-20181114.pdf





Ivas -articles

# New Zealand Police Shooting Range Manual

For the safe design, construction and operation of shooting ranges containing the Commissioner's safety standards in accordance with Section 380 of the Arms Act 1983