WORKSAFE
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HEALTH & SAFETY AT WORK ACT · HSWA

QUICK GUIDE

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Safe use of lasers for bird-scaring

This guide covers the use of lasers to scare and deter birds. Lasers – either hand-held or mounted on a stand – emit powerful, narrow concentrated beams of light over great distances.

They can be programmed to operate at random intervals to disturb birds. Laser beams are visible during the day and especially at night.

There are risks to workers and others from lasers. Even a low-powered laser can cause temporary or permanent blindness. If the beam blinds a driver or pilot this could cause a serious incident resulting in loss of life.

The guide:

- is for businesses where birds gather– such as farms, vineyards, orchards or similar properties where crops are grown, and airports
- provides advice on how a person conducting a business or undertaking (PCBU) can manage the risks arising from the use of lasers.

Before you read this guide you should read *Bird-scaring methods – an introduction to risk management* on our website. It covers your Health and Safety at Work 2015 (HSWA) duties and related information: worksafe.govt.nz

How you can manage risks

Laser equipment must be well-controlled to prevent the beam pointing into airspace, blinding people or animals, or activating by mistake. This section outlines control measures you should consider to eliminate or minimise risks associated with the use of lasers. Give preference to control measures that protect many workers at the same time.

If you cannot effectively manage the risks of lasers, then WorkSafe recommends that you consider alternative methods of bird-scaring.

An Australian and New Zealand standard (AS/NZS IEC 60825.14:2011) covers the safety of laser products, including classification requirements. Lasers are classified according to the degree of optical radiation hazard. Designers, manufacturers, importers and suppliers of laser products have duties under HSWA. These duties include providing health and safety information to other PCBUs about their products or designs. If you purchase a laser product for bird-scaring, it should have been correctly classified by the manufacturer or their agent and meet the requirements of the relevant standard.

You must also meet the requirements of Civil Aviation Rules Part 77 regarding the hazard of lasers to aviation.

There may be risks and hazards that are not identified in this guide. You should still identify and assess health and safety risks arising from your own work – and you must engage with workers (and their representatives) when you are doing this. Workers must have opportunities to make suggestions, ask questions or raise concerns.

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WHAT COULD GO WRONG	CONTROL MEASURES **Note**: Personal protective equipment (PPE) is the least effective control measure. It should not be the first or only control measure you consider.
Laser strikes plane, distracts or blinds pilot	Notify laser activity to the Civil Aviation Authority (CAA) for assessment before the laser is used: – CAA will assess the potential hazard caused, and advise on further action to mitigate the risk – for example, if you cannot prevent the laser from pointing into the air, the laser could be a prohibited activity if there is a risk of striking an aircraft. Comply with Part 77 of the Civil Aviation Rules Objects and activities affecting navigable airspace
Laser impacts outside boundary of designated area Beam travels incorrectly or off-target: – over roads – up in the air	Make sure the laser stays pointed at the ground at all times, or install a shroud (shade) to shield the beam and prevent it pointing up into airspace. Limit movement of the beam – restrict range to precise boundaries within the scaring area; point laser within property perimeter. Set laser up: – as high as possible above the ground (for example, 5m) to maximise 'point down' effect – to swivel down as default, not up. Test laser set-up at night to ensure that impact/range of the beam is visible. Make sure two people check laser set-up before operation.
Laser strikes eyes	Before using a laser, calculate the laser's minimum safe viewing distance (also known as Nominal Ocular Hazard Distance or NOHD). Make sure laser operators and any nearby workers: – wear appropriate eye protection – such as protective eyewear matched to the wavelength of the laser being used – do not stare into the laser beam. Use the right laser for the job – this should be the lowest possible laser class/power output for the effect required. Make sure the beam is not directed at reflective surfaces such as mirrors, windows, signs, or standing water bodies such as ponds or lakes. Make sure only competent and trained people set up, install, operate, monitor and maintain laser equipment: – standardise procedures for laser set-up and programming – consider appointing a Laser Safety Officer to be responsible for all laser-related health and safety matters. Maintain equipment and confirm that all safety features (such as interlock devices) are in good working order. Install signs indicating where and when lasers are in use. Keep workers and other people out of target area. Isolate areas where the laser is in use, to prevent people entering. Notify neighbours and others nearby so they can avoid the area.
Skin burn from Class 4 laser	Maintain equipment and confirm that all safety features (such as interlock devices) are in good working order. Isolate the area where the laser is used. Make sure first aid and other emergency procedures are in place.
Electric shock (from equipment powered by electricity or solar energy)	Ensure equipment is properly earthed – outdoor power sockets should be weather-resistant and waterproof. Provide adequate cover/protection for equipment. Do not place or operate equipment in or near water. Disconnect power immediately if liquids spill in or onto equipment. Check equipment (including cords, leads, and/or batteries) regularly for faults and visible signs of damage, such as: – cracked casings – missing or damaged guards – dry and brittle insulation – burn marks or signs of overheating. Remove faulty equipment immediately and repair or replace it. Make sure only qualified technicians service equipment. Follow manufacturer's instructions.

WHAT COULD GO WRONG	CONTROL MEASURES **Note**: Personal protective equipment (PPE) is the least effective control measure. It should not be the first or only control measure you consider.
Laser harms non-pest birds already in area	Consider outcome required of the laser use – the laser may deter new birds flying into or roosting in an area, but may harm birds already there. Know behaviour of non-pest species. Ensure the power, wavelength, placement and setting is safe for all species that may cross the laser path (not just target species).
Vehicle vibration or direct impact affects laser calibration direct impact	Check the calibration daily. Fence off or isolate the laser unit to minimise calibration issues. Make sure vehicle operators know of the presence and location of lasers – install signs and tell operators that lasers are in use.
Extreme weather affects laser calibration	Check the calibration daily. Check laser units for signs of damage after extreme weather.
Laser used by unauthorised person	Use the laser with lock systems (for example, a key lock). Restrict access to laser controls.
Fire breaks out	Position and direct the laser beam away from materials that could catch fire or explode (such as a fuel tank). Keep the laser unit away from sources of heat and ignition such as sparks, open flames, hot surfaces, and cigarettes. Do not use the laser on dry, hot days. Only use the laser in a well-ventilated area. Service and clean equipment according to manufacturer's instructions.
Laser malfunctions (for example, unit does not turn off at programmed time)	Check that equipment has fail-safe mechanisms. Check regularly that the laser is turning on and off as scheduled. If repairs are needed, use only recommended parts.

Reporting laser use

Lasers must not point into the sky at any time of the day or night. To report lasers pointing into the sky, contact:

- CAA airspacehazards@caa.govt.nz
- Police: Call 111 if there is an immediate risk of harm.

More CAA information

Lasers are one of the major airspace hazards, along with lights, drones, fireworks and other projectiles. See:

- Part 77 of the Civil Aviation Rules: Objects and activities affecting navigable airspace
- CAA information covering hazards to aviation – and notification requirements: www.aviation.govt.nz

Lasers and other beams of light are regarded as a hazard in navigable airspace if they can adversely affect the pilot or the aircraft operation, or be mistaken for an aeronautical light. Contact the CAA for further information: airspacehazards@caa.govt.nz

More information

High-power laser pointers: www.health.govt.nz

Other bird scaring guidance

Introduction – general risk management

Firearms

Gas guns, gas cannons and pyrotechnic cartridges

Vehicles

Drones

Netting