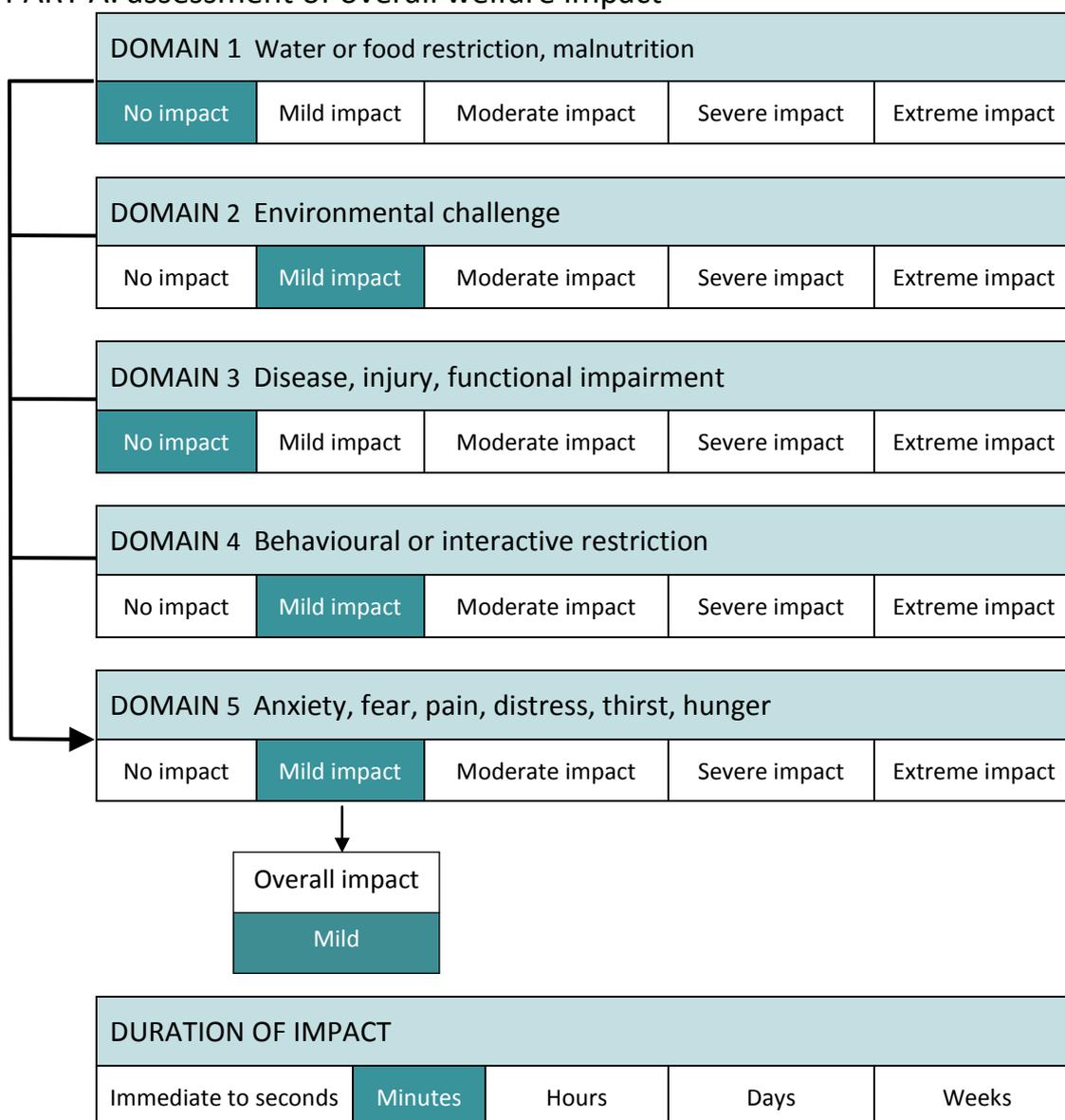


Control method: Rabbit warren destruction by explosives

Assumptions:

- Best practice is followed in accordance with the standard operating procedure RAB007.
- Blasting is used primarily as a method of harbour destruction rather than for killing rabbits. It is best practice to perform warren blasting when rabbit numbers are at their lowest e.g. after a disease outbreak or after a control method such as fumigation or poisoning has been applied. The intention is that a more humane control technique is used (or natural population reduction) to reduce rabbit numbers prior to destruction of the warren.
- A high level of expertise is required to apply this technique due to the use of explosives. Ammonium nitrate mixed with fuel oil (ANFO) is the most commonly used explosive for warren destruction. Explosives are extremely hazardous and should only be used by suitably qualified and accredited operators.

PART A: assessment of overall welfare impact



SCORE FOR PART A:	3
Summary of evidence:	
Domain 1	No impact in this domain.
Domain 2	Ripping would affect any rabbits that are not inside the warren at the time by depriving them of shelter from extreme temperatures (and also predators).
Domain 3	No impact in this domain.
Domain 4	Prior to ripping, rabbits are driven underground into the warren by making loud noises (e.g. riding motorbikes) and using dogs. These disturbances are likely to cause "flight or fight" stress responses that are similar to those seen when prey escape a predator. These endocrine responses are short lived and stress hormone levels quickly return to normal ³ .
Domain 5	The rabbits are likely to experience some fear due to the noise and activity when being moved into the warren and whilst the explosives are being placed.

PART B: assessment of mode of death

Time to insensibility (minus any lag time)				
Immediate to seconds	Minutes	Hours	Days	Weeks
Level of suffering (after application of the method that causes death but before insensibility)				
No suffering	Mild suffering	Moderate suffering	Severe suffering	Extreme suffering

SCORE FOR PART B:	A-B
Summary of evidence:	
Duration –	<p>In most cases the time to death is likely to be very rapid especially when complete destruction of the warren is achieved.</p> <p>Failure to cause complete collapse in deep warren systems may result in some rabbits becoming trapped in partly destroyed tunnels and then asphyxiating or dying from blast-related injuries that were not immediately lethal. It is essential that the tunnel system is completely destroyed so that the rabbit dies as quickly as possible.</p>

Suffering –

If rabbits are rendered immediately insensible due to the blast-generated pressure waves and they do not regain consciousness prior to death, there will be no suffering. Although there have been no studies on rabbits to formally assess the effectiveness or humaneness of this method, field observations by operators indicate that it is likely that *all* rabbits in the warren will be affected when best practice is followed.

Depending on the distance from the nearest blast, rabbits in the warren may be killed or injured by the following:

- injuries and haemorrhages (especially to the lungs, ears and gastrointestinal tract) caused by the blast wave (see comments below);
- burns from the explosive gases produced (can be as high as 3000°C);
- injuries caused by fragments of solid material e.g. rock, wood fragments propelled by the blast; and
- crushing and suffocation from the collapse of the warren.

Summary

CONTROL METHOD:	Rabbit warren destruction by explosives
OVERALL HUMANENESS SCORE:	3A-B
<p>Comments</p> <p>Primary blast injuries are caused by the sudden increase in air pressure after an explosion. The term ‘overpressure’ is used to refer to the shock wave from an explosion that is greater than the surrounding atmospheric pressure. The amplitude of the peak overpressure, the rate of pressure rise, and its total duration all determine the biological effects of a primary blast. Air containing organs i.e. lungs, middle ear and the gastrointestinal tract are the most vulnerable to the effects of the blast wave. Exposure to pressure levels of 80 psi or above is considered lethal for more than 50% of cases ¹.</p> <p>Researchers have examined the injury patterns sustained by humans in terrorist bombings and concluded that explosions occurring in a confined space cause higher immediate mortality rates and more severe injuries compared with explosions occurring in the open air^{1,2}.</p> <p>Therefore in an enclosed warren situation where the blast will be contained, we could expect that the rabbits are exposed to a relatively prolonged peak overpressure resulting in increased severity of injury and high immediate fatality rate.</p>	

Bibliography

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