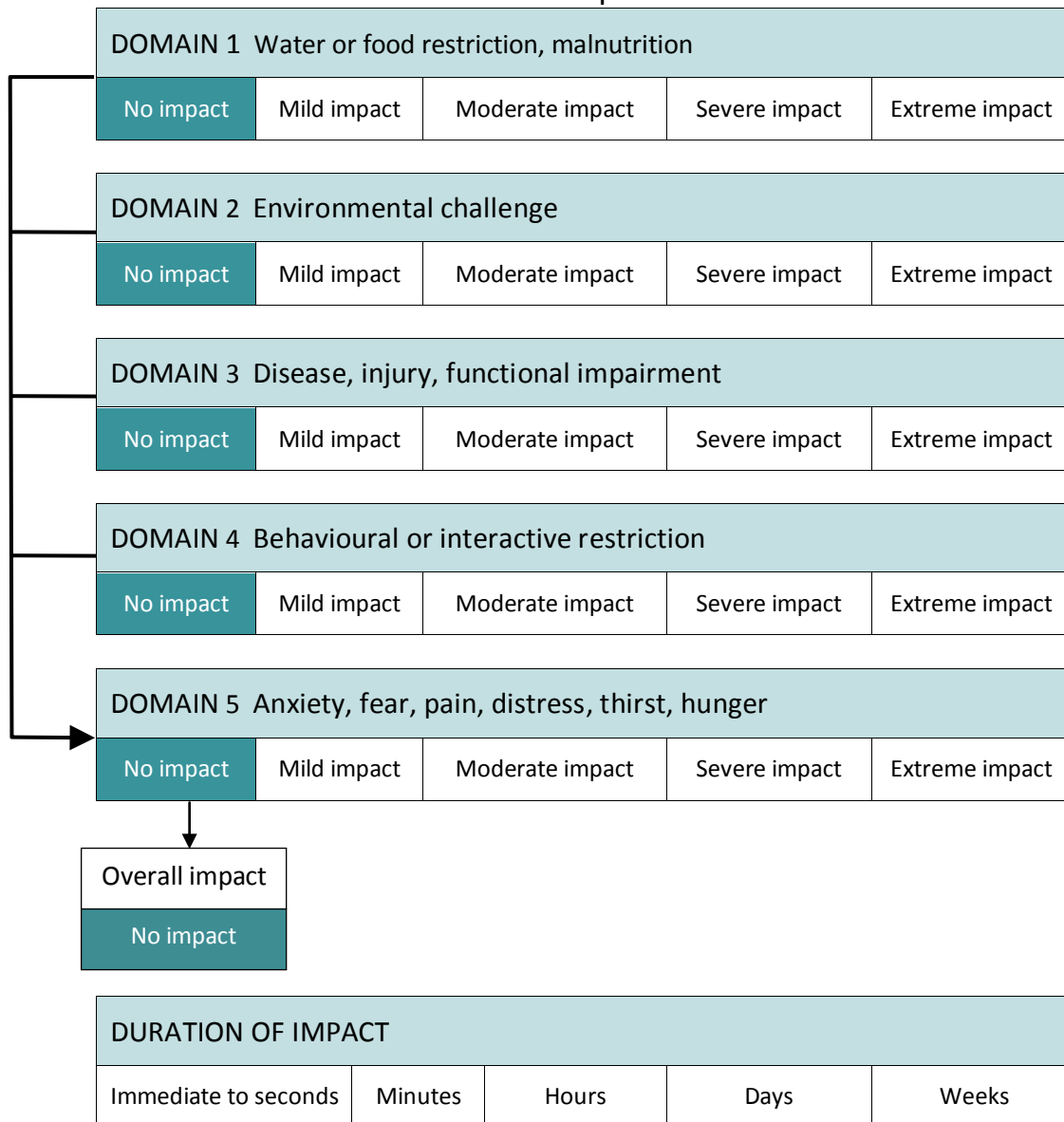


Control method: Bait delivery of Rabbit Haemorrhagic Disease Virus K5 strain (RHDV1 K5)

Assumptions:

- Best practice is followed in accordance with the standard operating procedure RAB011. RHDV1 K5 is delivered to rabbits via treated oats or carrots.
- The effect on dependent young is not taken into consideration with this assessment only the impact on the target animal.

PART A: assessment of overall welfare impact



SCORE FOR PART A:	1
Summary of evidence:	Note that Part A of the assessment examines the 'impact on the animal prior to the action that causes death'. Part B then looks at the 'actual mode of death' and the 'extent and duration of suffering caused'. With ingestion of baits there is usually little or no impact in Part A.
Domain 1	No impact in this domain.
Domain 2	No impact in this domain.
Domain 3	No impact in this domain.
Domain 4	No impact in this domain.
Domain 5	No impact in this domain.

PART B: assessment of mode of death

Time to insensibility (minus any lag time)				
Very rapid	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:	E-G
Summary of evidence:	
Duration –	<p>The incubation period for RHDV varies from 1 to 3 days with death usually occurring 12-36 hours after the onset of fever (>40°C)^{1,9}. However, the response of individual rabbits can be variable (for example, there is a record of death 114 hours after eating infected bait²). Most individuals die between 48-72 h post-infection⁶.</p> <p>Ambient temperature also influences the time to death, with lower temperatures associated with shorter time to death. In an ambient temperature of 13°C the average time to death was 56 hours (range 19-88 hours), while at a temperature of 27°C the average time to death was 89 hours (range 51-147 hours)². Additionally, rabbits orally dosed with infected bait take about 20 hours longer to die than rabbits infected by intradermal or intramuscular injection².</p>
Suffering –	<p>It is not clear if infected rabbits suffer discomfort from fever. However, fever can last for up to 2 days so there is the potential for suffering due to loss of appetite, lethargy and fatigue³.</p> <p>The overall level of suffering is moderate but there could be severe suffering for a short period (minutes) just prior to death for some animals (although it is not clear whether they are conscious at this time). In the peracute form of the disease, rabbits die suddenly without previous clinical signs within a few hours of the incubation period. In the acute form, animals die after a short period of disease (1-3 days), with convulsions and signs of suffocation. Shortly before death, opisthotonus (a condition in which the body is held in an abnormal posture with the body rigid, the head thrown backward and the back is severely arched), sudden crying, and uncoordinated movements or paddling of the limbs may occur⁴.</p> <p>The disease appears typically as a necrotizing hepatitis with associated haemorrhaging, and death occurs as a result of generalised organ dysfunction⁵.</p> <p>The mortality rate for RHDV usually ranges between 70 and 90%^{1,9}. A limited number of rabbits (5-10%) may show a chronic or subclinical form of the disease. Subclinical or chronic RHD is characterised by severe and generalised jaundice, loss of weight and lethargy. Death may occur after 1 or 2 weeks, but some rabbits survive after seroconversion^{1,9}.</p>

Summary

CONTROL METHOD:	Bait delivery of Rabbit Haemorrhagic Disease Virus K5 strain (RHDV K5)
OVERALL HUMANENESS SCORE:	1E-G
<p>Comments</p> <p>Disease caused by RHDV1 is confined to adult rabbits, over about two months of age⁶. Rabbit kittens less than around 5-6 weeks of age are resistant to developing a full infection, possibly due to a more effective and specific immune response (compared with adults) and/or the presence of mechanisms negatively affecting viral replication in the liver^{6,7}. This innate immunity in kittens can also be extended by maternal antibodies up to around 10-12 weeks of age⁷.</p> <p>In 2015, RHDV2 virus was found in wild rabbits in the ACT, and has since been discovered across NSW, SA and VIC. This new virus is referred to as RHDV2 because the mode of death is the same as RHDV1, however they are two separate viruses. In contrast to RHDV1, RHDV2 can cause death in young kittens (3-4 weeks) and vaccinated adults. RHDV2 has also been confirmed in a small number European Brown Hares—the only hare species present in Australia—however it is unknown if these infections have spread from rabbits to hares, or if RHDV2 spreads effectively between hares as it does between rabbits⁸. At this stage it is unknown how RHDV1 and RHDV2 will interact in wild rabbit populations.</p>	

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