

Scenario 1 - Broilers


Score sheet

Legal stocking density of 39kgm²

Name of scorer:

Expert 10

First round comments

Welfare principles	Welfare criteria		1st	90% certain	90% certain	2nd	90% certain	90% certain	
			round score	lower bound	upper bound	round score	lower bound	upper bound	
Good feeding	1	Provision and access to food. Animals should have appropriate access to the quantity and quality of appropriate foodstuffs for health and wellbeing.	30	20	35	70	60	75	Fed ad lib but harder to navigate building/ companions to get to resources at higher SDs, particularly in last 2 weeks of production (1/3 life). As birds get older and move less they may prefer to be closer to resources which may be harder at higher SDs. May be greater frustration particularly as broilers likely to feel hungry all the time. Harder to show behavioural synchronicity for socially facilitated behaviour
	2	Provision and access to water. Animals should have appropriate access to the quantity and quality of water for health and wellbeing.	40	20	45	80	70	90	Harder to navigate building/ companions to get to resources at higher SDs, particularly in last 2 weeks of production (1/3 life). As birds get older and move less they may prefer to be closer to resources which may be harder at higher SDs. May be greater frustration.
Good housing	3	Animals should have comfort when resting.							Greater disturbance of resting birds at higher SDs particularly in last 2 weeks of production (1/3 life) as other birds clamour over them - to get to resources, particularly where feeding synchrony harder at higher SDs. Sleep/rest disruption likely associated with negative states. Higher SD likely harder to manage litter quality; litter likely to be wetter from droppings, particularly towards end production, less comfortable to sit on (risking contact dermatitis an derflection). May also be harder to manage air quality - dust, ammonia etc birds known to avoid ammonia concentrations >20ppm (aversive)
	4	Animals should have thermal comfort being neither too hot nor too cold.	20	15	27	30	25	40	Harder to manage metabolic heat output for broilers towards end of production at higher stocking densities and this may be more of a concern with increasing summer temperatures where limited options allow cooling of barns. Close spacing will limit behavioural thermoregulation via raising wings (space) and panting as humidity will increase faster with higher SDs. Broilers may overheat and die (especially if additionally hard to reach drinkers)
	5	Animals should have sufficient space to move freely.	40	20	47	50	20	60	40
Good health	6	Animals should be free from injuries and disorders (e.g. skin conditions, lameness, bone fractures etc.).	20	15	35	30	15	40	Higher SDs are associated with greater risk of lameness, greater skin injuries / scratches associated with birds clamouring over one another which can become infected, contact dermatitis (breast blister, hockburn, footpad dermatitis) via effects on litter quality and lowered activity; all likely associated to some degree with pain (though not all gait abnormalities are painful for at least some period of the production cycle)
	7	Animals should be free from disease, including metabolic conditions, with high standards of health care and hygiene.	20	15	35	50	45	65	Higher SDs can reduce gut health and increases susceptibility to necrotic enteritis likely to be associated with dehydration and pain. SDs can be associated with higher mortalities.
	8	Animals should not suffer pain - for example as a result of poor management, handling, surgical or other procedures, or slaughter etc.	30	10	40	60	55	75	May be easier to catch animals at depopulation as less space to move (though not v active) but may clamour of each other more if trying to escape so potentially cause greater injury. (Contact dermatitis is influenced by management and can be painful, as can lameness but addressed under injuries), birds likely to experience pain if lame and held by legs at depopulation - where lameness may be greater at higher SDs
Appropriate behaviour	9	Animals should be able to express normal, non-harmful social behaviours (such as grooming and social bonding).	40	20	45	60	50	65	Broiler appear motivated to cluster at rest but it may be harder to escape social conflict at higher densities and behavioural synchrony is reduced
	10	Animals should be able to express other normal behaviours (e.g. foraging, exploring).	10	5	15	20	10	30	Higher SDs (36kgm2+) show reduced highly motivated behaviour including foraging, comfort behaviour (preening, dustbathing, wingflapping etc) and play associated with positive states and some socially facilitated (which could be restricted with limited space to move) particularly towards end of production cycle. Due to space to perform behaviour, access to appropriate resources / sites and litter quality
	11	Animals should be handled well with positive and not negative animal-human relationships.	30	15	45	40	30	45	evidence for fearfulness increased under higher SD contradictory, but control of exposure to negative stimuli and access to positive stimuli limited by restricted movement.
	12	Additional aspects not already adequately covered above in relation to the balance between positive and negative affective states for animals.	15	10	20	50	15	55	Lower choice and control in space restricted environments

Scenario 1 - Broilers

Score sheet

Legal stocking density of 30kgm²

Name of scorer:

Expert 10

First round comments

Welfare principles	Welfare criteria		Highest level of welfare - 100						
	0 - Lowest level of welfare		1st round score	90% certain lower bound	90% certain upper bound	2nd round score	90% certain lower bound	90% certain upper bound	
Good feeding	1	Provision and access to food. Animals should have appropriate access to the quantity and quality of appropriate foodstuffs for health and wellbeing.	50	40	60	75	65	85	Approx reduction 4 birds / m2 so approx 20% (assuming slaughter at 2.3kg = 13 birds @30kgm2 vs 17 at 39kgm2), may be easier to navigate building/ companions to get to resources / stay a bit closer to resources in last 2 weeks of production (1/3 life), possibly less frustrating.
	2	Provision and access to water. Animals should have appropriate access to the quantity and quality of water for health and wellbeing.	50	30	55	85	75	95	Approx reduction 4 birds / m2 so approx 20% (assuming slaughter at 2.3kg = 13 birds @30kgm2 vs 17 at 39kgm2), may be easier to navigate building/ companions to get to resources / stay a bit closer to resources in last 2 weeks of production (1/3 life), possibly less frustrating.
Good housing	3	Animals should have comfort when resting.	40	35	50	45	40	55	Reduced disturbance of resting birds particularly in last 2 weeks of production (1/3 life) of 39 km2 though still unlikely to be synchronous. likely easier to manage air and litter quality, latter as more dry and friable particularly towards end production, likely more comfortable to lie on with reduced risk of contact dermatitis
	4	Animals should have thermal comfort being neither too hot nor too cold.	55	40	65	55	40	70	May be easier to manage metabolic heat output for broilers towards end of production vs 39km2 though unsure how much; likely helpful for controlling increased temperatures where limited options allow cooling of barns (though infrequent can have huge impacts on mortality) and potentially improve behavioural thermoregulation via raising wings (space).
	5	Animals should have sufficient space to move freely.	25	20	30	50	35	60	60 Effa (2023) estimated change from 35/36 kgm2 to 30kgm2 would increase percentage time light spent walking from 4.5% - 5.2% - 16% of the difference between average broiler with unrestricted space (8.5%) and birds at 35/36kgm2 @ 5 days ahead of slaughter. Space likely to improve ability to perform highly motivated behaviours and potentially health, increase control of exposure to negative stimuli (e.g. negative social interaction, fear eliciting stimuli) and opportunity to experience positive states if easier to access enrichments
Good health	6	Animals should be free from injuries and disorders (e.g. skin conditions, lameness, bone fractures etc.).	35	20	45	45	20	5	There may be reduced risk of lameness via greater activity, less clambering over other birds and also fewer associated skin injuries / scratches. If litter quality is better these may be less likely to become infected and contact dermatitis (breast blister, hockburn, footpad dermatitis) may be somewhat reduced with fewer birds experiencing associated pain, particularly towards the end of the production cycle
	7	Animals should be free from disease, including metabolic conditions, with high standards of health care and hygiene.	30	20	35	55	5	75	Higher SDs can reduce gut health and increases susceptibility to necrotic enteritis likely to be associated with dehydration and pain. SDs can be associated with higher mortalities.
	8	Animals should not suffer pain - for example as a result of poor management, handling, surgical or other procedures, slaughter etc.	35	15	45	65	60	75	May be harder to catch animals at depopulation as more space to move (though not v active) but may clamber of each other less and may experience less pain when held by legs at depopulation if less likely to be lame
Appropriate behaviour	9	Animals should be able to express normal, non-harmful social behaviours (such as grooming and social bonding).	50	30	55	65	55	70	Greater space may make it a little easier to escape social conflict and increase behavioural synchrony
	10	Animals should be able to express other normal behaviours (e.g. foraging, exploring).	35	30	50	40	30	60	could show increased highly motivated behaviour including foraging, comfort behaviour (preening, dustbathing, wingflapping etc) and play associated with positive states and some socially facilitated particularly towards end of production cycle
	11	Animals should be handled well with positive and not negative animal-human relationships.	35	20	45	45	35	50	evidence for fearfulness increased under higher SD contradictory, but control of exposure to negative stimuli and access to positive stimuli limited by restricted movement.
	12	Additional aspects not already adequately covered above in relation to the balance between positive and negative affective states for animals.	30	15	45	60	25	65	Improved choice and control in less space-restricted environments