

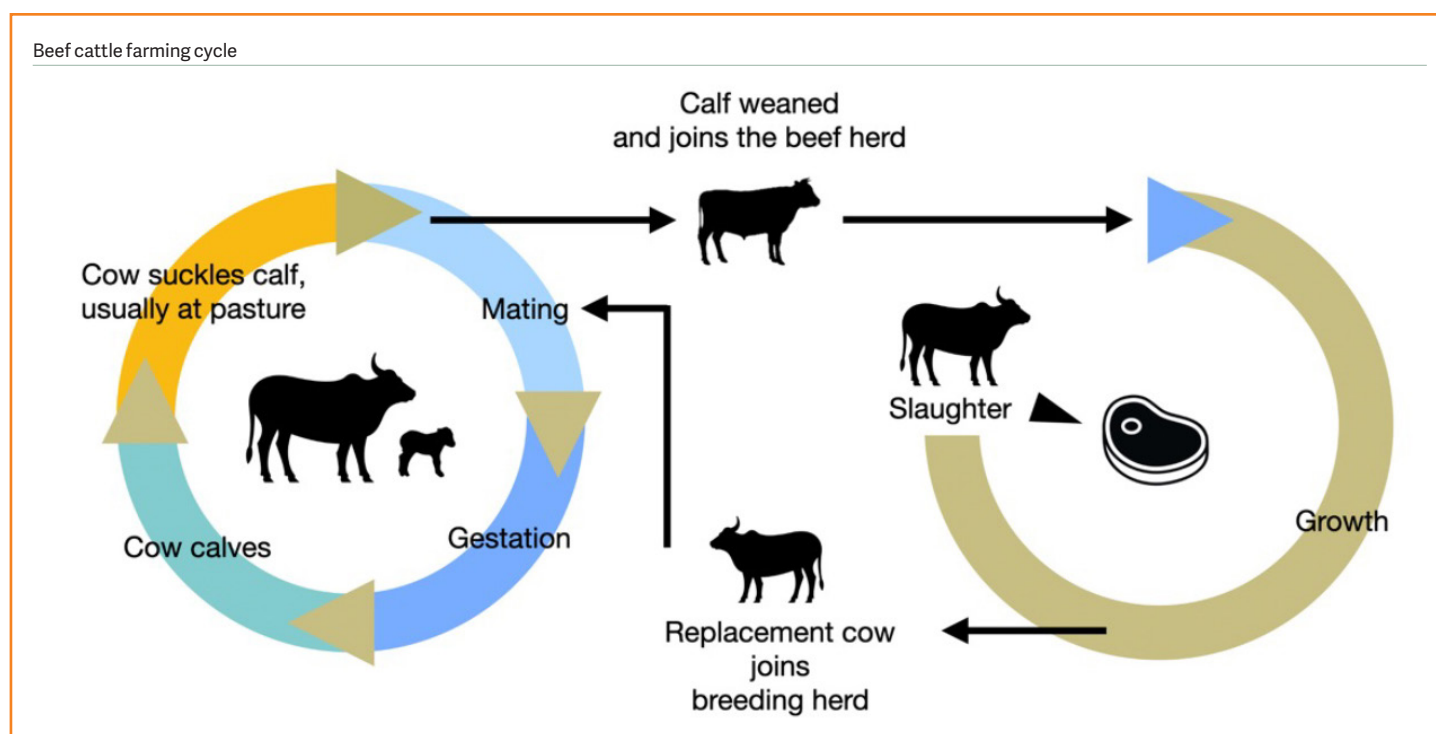
5.1 Beef cattle Toolkit

Introduction

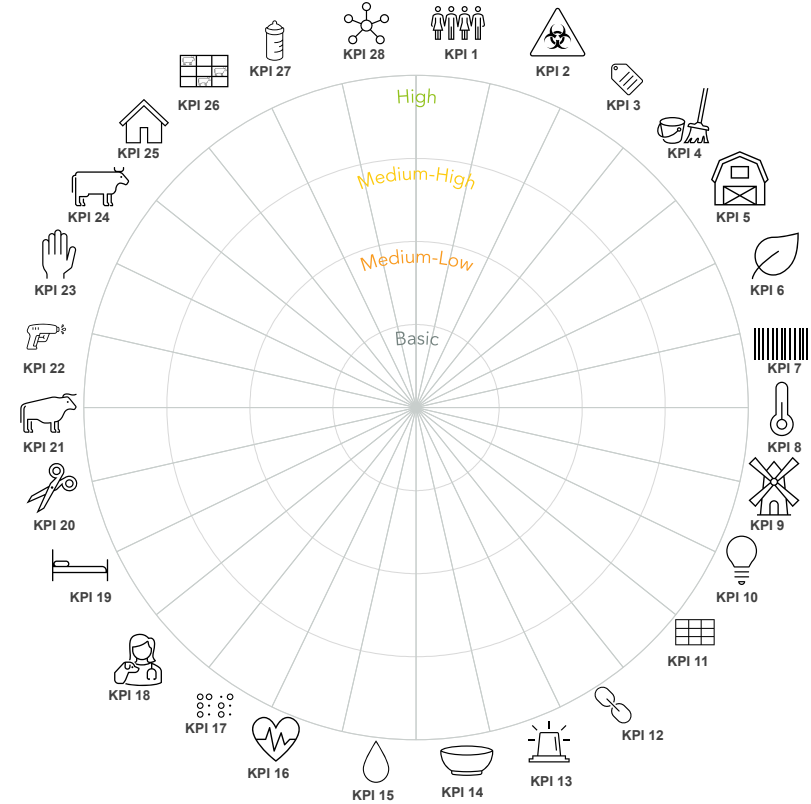
Cattle were domesticated around 10,000 years ago from aurochs in the middle east, creating the *Bos taurus*-type of animal, and from a different type of auroch in the Indian subcontinent, resulting in zebu-type cattle (*Bos indicus*). Cattle are raised to produce milk, meat and hides, and to provide draft power for productive work. In grass-based systems, cattle play an important role in nutrient recycling and can convert human-inedible plant matter into protein. Cattle are raised in diverse production systems ranging from capital-intensive, specialised beef and dairy grass-based and feed-lot systems; through multi-purpose cattle in labour-intensive, mixed crop-livestock systems; to extensive pastoral and agro-pastoral systems. According to the FAO, the world has around one billion head of cattle. Brazil has the largest number of cattle in the world, followed by India and China, and at least 100 countries have more than one million head of cattle. Cattle can live for up to 22 years, but are usually slaughtered much younger than this – often at two years of age. Cows can usually give birth to one calf (occasionally twins) in each yearly cycle (See Figure: Beef cattle farming cycle).

Cows prefer to spend time at pasture, especially at night, but will opt for housing in certain climatic conditions. Cattle have been shown to enjoy social interactions, including between cow and calf, although both males and females fight occasionally. Calves enjoy playing as they get older, and even occasionally as adults, such as when first accessing pasture after winter housing. Cattle will choose to eat a range of plants when available.

Key welfare impacts on cattle include: lack of pasture access in feed lot cattle (restricting their grazing behaviours); mutilations such as castration and disbudding; very early weaning of calves; lameness; skin lesions and swellings; use of draft animals that can result in skin lesions; transport over long distances; and non-stun slaughter.

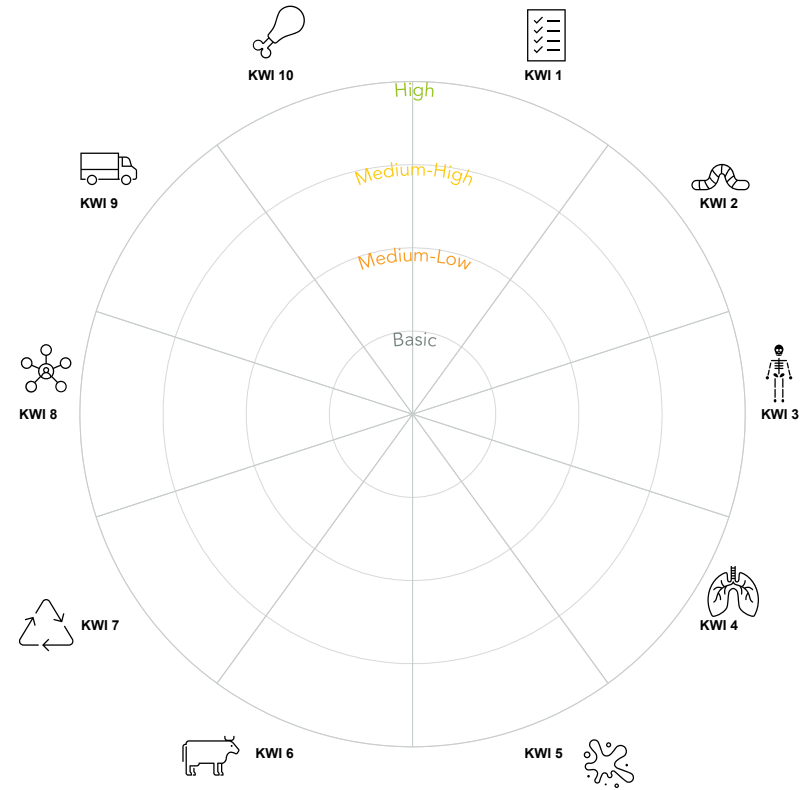


KPI	Achievement
KPI 1: People, training	<input type="radio"/>
KPI 2: Biosecurity	<input type="radio"/>
KPI 3: Animal identification	<input type="radio"/>
KPI 4: Cleaning and disinfection	<input type="radio"/>
KPI 5: Farm environment: physical	<input type="radio"/>
KPI 6: Farm: pasture, all-year access	<input type="radio"/>
KPI 7: Handling facilities	<input type="radio"/>
KPI 8: Farm environment: temperature	<input type="radio"/>
KPI 9: Farm environment: ventilation, air quality, dust	<input type="radio"/>
KPI 10: Farm environment: light	<input type="radio"/>
KPI 11: Farm environment: stocking	<input type="radio"/>
KPI 12: Tethering	<input type="radio"/>
KPI 13: Farm environment: emergency	<input type="radio"/>
KPI 14: Feed	<input type="radio"/>
KPI 15: Water	<input type="radio"/>
KPI 16: Health, and health planning	<input type="radio"/>
KPI 17: Isolation	<input type="radio"/>
KPI 18: Medicines	<input type="radio"/>
KPI 19: Litter, bedding	<input type="radio"/>
KPI 20: Mutilations	<input type="radio"/>
KPI 21: Management of beef bulls	<input type="radio"/>
KPI 22: Euthanasia	<input type="radio"/>
KPI 23: Transport	<input type="radio"/>
KPI 24: Calving beef cows	<input type="radio"/>
KPI 25: Management of calves: calf housing	<input type="radio"/>
KPI 26: Management of calves: space	<input type="radio"/>
KPI 27: Management of calves: calf feeding (including veal calves)	<input type="radio"/>
KPI 28: Management of calves: calf social	<input type="radio"/>



Basic level not achieved	
Basic (B)	
Medium-Low (ML)	
Medium-High (MH)	
High (H)	
Overall KPI achievement	

KWI		Achievement
	KWI 1: Animal records	<input type="radio"/>
	KWI 2: Lameness	<input type="radio"/>
	KWI 3: Body condition	<input type="radio"/>
	KWI 4: Respiratory disease, pneumonia	<input type="radio"/>
	KWI 5: Cattle cleanliness	<input type="radio"/>
	KWI 6: Hair loss, swellings	<input type="radio"/>
	KWI 7: Stereotypies	<input type="radio"/>
	KWI 8: Social	<input type="radio"/>
	KWI 9: Transport	<input type="radio"/>
	KWI 10: Slaughter	<input type="radio"/>
	Basic level not achieved	
	Basic (B)	
	Medium-Low (ML)	
	Medium-High (MH)	
	High (H)	
	Overall KWI achievement	



Overall achievement

	Overall achievement	
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**KPI 1**

People, training - Links to P1, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	All people responsible for the care of animals have received appropriate training by others with appropriate experience, who can demonstrate sufficient knowledge of animal behaviour, general signs of diseases and indicators of poor animal welfare.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	People handling animals are trained in handling techniques, cow care, and biosecurity. Records of training are kept.	<input type="radio"/>		<input type="radio"/>		
	Routine procedures should not cause injury, panic, lasting fear or avoidable pain or distress, and where painful procedures cannot be avoided, they should be carried out by competent and trained people.	<input type="radio"/>				
Medium-High (MH)	An animal welfare contact person or co-ordinator, responsible for animal welfare aspects within the farm or company is identified.	<input type="radio"/>		<input type="radio"/>		
	The animal welfare contact person has received training in animal welfare aspects.	<input type="radio"/>				
	Training, performance and competence of staff is reviewed, and periodic refresher training is carried out.	<input type="radio"/>				
High (H)	People in the company are supported to have higher-level training, or achieve professional qualifications in beef cow management, animal care and animal welfare.	<input type="radio"/>		<input type="radio"/>		
	The company supports staff to take part in development and training programmes.	<input type="radio"/>				

**KPI 2**

Biosecurity - Links to P5, P8, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Beef cattle housing has surfaces that allow cleaning, and are periodically cleaned, so animals can remain clean and to help prevent disease.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	A biosecurity programme /plan (Resource 7) is in place.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	Access to farm buildings is limited to essential farm employees only.	<input type="radio"/>		<input type="radio"/>		
	All farm visitors adhere to strict biosecurity requirements specific to the farm being visited.	<input type="radio"/>				
High (H)	The biosecurity programme includes a risk assessment, which may be based on hazard analysis and critical control point (HACCP) training, on the primary pathogens and parasites likely to pose a risk to the herd.	<input type="radio"/>		<input type="radio"/>		

**KPI 3**

Animal identification - Links to P10		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Cattle are identifiable, in line with the local requirements – for example, by ear tag or other permitted mark – to allow for traceability (see also: Mutilations KPI 20).	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Imported cattle are identifiable, in line with local requirements, by ear tag or other mark to allow for traceability.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	Marking of cattle is done with care, by trained people, and avoiding unnecessary pain or distress.	<input type="radio"/>		<input type="radio"/>		
High (H)	If used, neckbands, tailbands or leg bands are fitted with care and adjusted as required to avoid unnecessary pain or distress.	<input type="radio"/>		<input type="radio"/>		



KPI 4

Cleaning and disinfection - Links to P5, P8, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Vermin are controlled through the use of bait stations, traps and other appropriate and effective measures, and only approved pest control substances or chemicals permitted by law are used.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	The construction of accommodation, pens and handling facilities ensures they can be cleaned and disinfected.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	Written cleaning and disinfection protocols are implemented.	<input type="radio"/>		<input type="radio"/>		
	A list of permitted disinfectants and detergents used on the farm, and their safety data sheets, is available.	<input type="radio"/>		<input type="radio"/>		
High (H)	The most humane effective baiting method is adopted, and pest control baits are only accessible to the targeted species.	<input type="radio"/>		<input type="radio"/>		



KPI 5

Farm environment: physical - Links to P4, P5, P6, P9		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Floors, surfaces, fittings, equipment and other facilities in and around the cattle housing is designed, constructed, operated and maintained to minimise the risk of escape, injury, electrical shock, trapping, or disease, and are free from rough edges and sharp protrusions.	<input type="radio"/>		<input type="radio"/>		
	Cattle kept outdoors must have access to shelter and a well-drained lying area.	<input type="radio"/>				
Medium-Low (ML)	The house environment provides opportunity for comfortable resting and normal movement, and expression of a range of normal cattle behaviours.	<input type="radio"/>		<input type="radio"/>		
	Slats, if used, do not result in injury to the animals' feet.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	Cattle are protected from predators, vermin and excessive noise.	<input type="radio"/>		<input type="radio"/>		
High (H)	Automatic systems and machines (for example, automated feed systems for beef cattle) have not replaced human 'care and observation' until their safe and reliable use in maintaining animal welfare has been demonstrated.	<input type="radio"/>		<input type="radio"/>		

**KPI 6**

Farm: pasture, all-year access - Links to P3, P4, P6		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer is aware of the welfare advantages of access to pasture when the ground conditions allow.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	If cattle are kept outside permanently, they should be protected from extreme weather conditions (especially for land prone to drought, flooding, or snow cover), and able to receive adequate food and water.	<input type="radio"/>		<input type="radio"/>		
	Where present, dirt lots, loafing paddocks, loafing yards and wood chip corrals are maintained to provide good ground conditions for the cattle.	<input type="radio"/>				
	Animals at pasture are given protection from biting insects where possible.	<input type="radio"/>				
Medium-High (MH)	At pasture, there is enough shade and shelter available for all animals to use at the same time.	<input type="radio"/>		<input type="radio"/>		
	For cattle kept outside permanently, there is a dry lying area or alternative site where they can be moved in the case of extreme weather.	<input type="radio"/>				
High (H)	As previous.	<input type="radio"/>		<input type="radio"/>		

**KPI 7**

Handling facilities - Links to P4, P5, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer uses temporary gates or handling facilities to move or handle cattle.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	There are appropriate permanent holding and handling facilities onsite.	<input type="radio"/>		<input type="radio"/>		
	Races and gates are designed so animals can move through them easily.	<input type="radio"/>				
	Cattle are not pulled or lifted by the tail, ears or limbs.	<input type="radio"/>				
	Sticks are not be used for hitting cattle.	<input type="radio"/>				
Medium-High (MH)	A crate or crush is available and in good condition, and designed for cattle of the appropriate size.	<input type="radio"/>		<input type="radio"/>		
High (H)	Loading facilities (if provided) have a ramp of no more than a 20% incline.	<input type="radio"/>		<input type="radio"/>		

**KPI 8**

Farm environment: temperature - Links to P4, P9		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Heating and cooling systems are capable of producing enough heat or cooling to ensure the cattle do not get too hot or too cold. This is particularly important for calves and young cattle.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Management steps (such as shade, shelter, increased ventilation) are taken if cows indicate signs of heat stress or extreme cold.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	As previous.	<input type="radio"/>		<input type="radio"/>		
High (H)	As previous.	<input type="radio"/>		<input type="radio"/>		

**KPI 9**

Farm environment: ventilation, air quality, dust - Links to P4, P9		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer is aware of air quality as a welfare concern.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Housing is effectively ventilated with control of humidity, no build-up of noxious gases (for example, ammonia, nitrogen oxide, hydrogen sulphide).	<input type="radio"/>		<input type="radio"/>		
	When removing slurry from under slats, a protocol is followed to avoid risks of dangerous gases which may be fatal to people and animals.	<input type="radio"/>				
Medium-High (MH)	If meters or testing tubes are used to assess air quality: ammonia must not exceed 25ppm.	<input type="radio"/>		<input type="radio"/>		
High (H)	An air quality score is used (see Resource 4).	<input type="radio"/>		<input type="radio"/>		

**KPI 10**

Farm environment: light - Links to P6		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Light levels are at the legal base requirement.	<input type="radio"/>				
	If no legal requirement exists, adequate levels of light are provided for carers to observe animals, and for the animals to carry out daytime behaviours.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Housing has lighting which allows inspection of the cattle, and normal behaviours and rest.	<input type="radio"/>		<input type="radio"/>		
	Dark rest periods are provided.	<input type="radio"/>				
Medium-High (MH)	Fixed or portable artificial lighting is available, at any time, to allow sufficient light to inspect animals, for example, during calving.	<input type="radio"/>		<input type="radio"/>		
High (H)	Natural light is provided.	<input type="radio"/>				
	Housed cows have a normal period of daylight hours, and access to an area lit to a level of at least 200 Lux measured at cow eye-level.	<input type="radio"/>		<input type="radio"/>		

**KPI 11**

Farm environment: stocking - Links to P4, P6		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Where stocking density is legislated, the legal specification is followed.	<input type="radio"/>				
	All cattle have sufficient space to walk, turn around, sit unobstructed, and access feed and water without undue competition.	<input type="radio"/>		<input type="radio"/>		
	If no local legal space allowance is specified, the recommendations in Resource 10 are adopted.	<input type="radio"/>				
Medium-Low (ML)	Yards or loose housing allow all cows to lie down at the same time, to rise without difficulty, and to turn around and stretch (see Resource 10 for recommended space allowances).	<input type="radio"/>		<input type="radio"/>		
	Cubicle housing systems provide at least 5% more cubicles than the number of cows.	<input type="radio"/>				
Medium-High (MH)	The loafing (non-cubicle) area per animal is at least 120% of the size of the cubicle lying area.	<input type="radio"/>		<input type="radio"/>		
High (H)	As previous.	<input type="radio"/>		<input type="radio"/>		



KPI 12

Tethering - Links to P4, P6		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	All-year-round tethering is not permitted.	<input type="radio"/>				
	If tethered, cattle are untethered before calving.	<input type="radio"/>				
	Exercise without a tether is provided daily for tethered cattle.	<input type="radio"/>				
	Tethers do not cause pain or injury, do not tighten, are made of non-abrasive materials.	<input type="radio"/>		○		
	Tethers allow cattle space to lie down, rise without difficulty, stand in a natural position, stretch and groom without obstruction.	<input type="radio"/>				
Medium-Low (ML)	No tethering of any cattle (cows, bulls, calves) is permitted.	<input type="radio"/>		○		
Medium-High (MH)	As previous.	<input type="radio"/>		○		
High (H)	As previous.	<input type="radio"/>		○		



KPI 13

Farm environment: emergency - Links to P7, P10, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The company has written plans in place to deal with emergencies such as fire, power failure, flooding, accidental injuries, freezing, failure of water and feed supply, or chemical or effluent spillage.	<input type="radio"/>		○		
	The written plan is in place, displayed and implementable in an emergency.	<input type="radio"/>				
Medium-Low (ML)	Contacts and emergency phone numbers, and contact numbers in cases where the emergency can affect human health, are available at each site.	<input type="radio"/>		○		
Medium-High (MH)	If generators are used for backup power, they are tested periodically under conditions of load.	<input type="radio"/>		○		
High (H)	The emergency plan includes approved methods of humane killing, with each method having a standard operating procedure (SOP) containing instructions for implementation, equipment requirements, training, safety, biosecurity and environmental aspects.	<input type="radio"/>		○		
	The methods proposed are consistent with national law.	<input type="radio"/>				



KPI 14

Feed - Links to P3		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The feed is of quantity and quality to maintain normal health and productivity, to prevent prolonged hunger or malnutrition, and is suited to the cattles' age and needs.	<input type="radio"/>		○		
Medium-Low (ML)	Feed and watering systems are easily accessible to all cattle, without bullying.	<input type="radio"/>				
	All feeding and drinking systems are checked daily for proper operation.	<input type="radio"/>				
	In feed barrier systems, 'pushing up' (moving feed closer to the feed barrier) is carried out, so cattle can access feed at all times.	<input type="radio"/>		○		
	Feed is stored to protect from contamination or water damage.	<input type="radio"/>				
	Medicated feed is kept separate and clearly labelled.	<input type="radio"/>				
Medium-High (MH)	Feeder space allowance for adult cattle is provided as suggested in Resource 10.	<input type="radio"/>		○		
High (H)	As previous.	<input type="radio"/>		○		



KPI 15

Water - Links to P3		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Water is of a quantity, quality and hygiene to maintain normal health, and to prevent dehydration.	<input type="radio"/>				
	Drinkers and drinking troughs meet both manufacturer recommendations and local regulatory requirements, and must provide adequate access for all cattle.	<input type="radio"/>		<input type="radio"/>		
	Drinking systems essential for cattle health and welfare are checked daily for proper operation.	<input type="radio"/>				
Medium-Low (ML)	Cattle have access to clean potable water during all daylight hours.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	Adequate drinking space is provided. Cattle have a minimum of 10cm water trough space per head, so at least 10% of the herd can drink at the same time.	<input type="radio"/>				
	There are multiple drinking points, good water flow and sufficient water capacity for peak demand.	<input type="radio"/>		<input type="radio"/>		
	Troughs are emptied and cleaned out every 1-2 weeks.	<input type="radio"/>				
	Water is tested annually to ensure potability to FAO standards (see FAO in Resource 12).	<input type="radio"/>				
High (H)	An emergency water supply has sufficient capacity to supply the site for 24 hours at maximum demand.	<input type="radio"/>		<input type="radio"/>		



KPI 16

Health, and health planning - Links to P5, P8		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	A procedure is in place to report, and deal with, an outbreak of any notifiable disease.	<input type="radio"/>				
	Daily (minimum) checks are carried out on cattle and calves kept outside.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Infectious, parasitic and metabolic diseases, injury, and conditions causing distress, are prevented and controlled through good management, good animal care, biosecurity, vaccination and genetic selection.	<input type="radio"/>		<input type="radio"/>		
	The farming system does not depend on prolonged or routine use of pharmaceuticals.	<input type="radio"/>				
	Twice daily (minimum) checks for animals about to give birth, and cattle and calves inside.	<input type="radio"/>				
Medium-High (MH)	A Health and Welfare (H&W) plan is in place (Resource 6).	<input type="radio"/>		<input type="radio"/>		
High (H)	The H&W plan is reviewed annually and authorised by the company veterinarian.	<input type="radio"/>		<input type="radio"/>		



KPI 17

Isolation - Links to P5, P8		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer is aware that separation of sick animals from healthy animals has welfare advantages.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Appropriate facilities are available (within 3 hours) for the segregation or isolation of sick or injured cattle.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	The isolation facility is capable of being cleaned and disinfected, and shares no airspace with other livestock housing, does not allow direct contact with any other animals, and has drainage preventing contamination of other livestock areas.	<input type="radio"/>		<input type="radio"/>		
High (H)	As previous.	<input type="radio"/>		<input type="radio"/>		



KPI 18

Medicines - Links to P5, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Any drugs or other agents used to treat cattle must be compliant with all local guidelines and applicable local legislation.	<input type="radio"/>				
	Hormones and antibiotics are not used as growth promoters.	<input type="radio"/>		<input type="radio"/>		
	Preventive (prophylactic) use of antimicrobials is not permitted.	<input type="radio"/>				
Medium-Low (ML)	Vaccines and medicines are stored securely and in the recommended conditions (label instructions).	<input type="radio"/>				
	Medicine use is recorded (Resource 5).	<input type="radio"/>				
	The company has access to a veterinarian experienced in cattle care.	<input type="radio"/>		<input type="radio"/>		
	Any antimicrobials classified as being of 'high' or 'medium' importance for human medicine, defined as Highest Priority Critically Important Antimicrobials (HPCIA), are not permitted for use in cattle, unless under veterinary advice.	<input type="radio"/>				
Medium-High (MH)	Persons responsible for administering medicines have relevant experience and training.	<input type="radio"/>				
	An annual review of medicine use should include a review of records and data, including medicine records, and make recommendations to responsibly reduce antibiotic usage where appropriate, without negatively impacting welfare.	<input type="radio"/>		<input type="radio"/>		
High (H)	An antimicrobial stewardship plan is in place and is complied with (see OIE 2016 example in Resource 12).	<input type="radio"/>				
	The plan is reviewed annually, and is linked to existing regional or national antimicrobial stewardship schemes.	<input type="radio"/>		<input type="radio"/>		
	The company reviews prophylactic treatment and makes recommendations for alternative disease prevention strategies.	<input type="radio"/>				



KPI 19

Litter, bedding - Links to P4		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Bedding provision (such as straw, hay, wood shavings, sand, rice hulls and rubber matting) is at the legal base requirement.	<input type="radio"/>				
	Housing conditions allow cows to be able to keep clean, and the cows are clean.	<input type="radio"/>		<input type="radio"/>		
	Where no legal definition exists, some new bedding material is added to the bedded area regularly to maintain comfort and hygiene.	<input type="radio"/>				
Medium-Low (ML)	Water, urine, dung or slurry does not accumulate to a degree which makes the cattle wet or dirty.	<input type="radio"/>				
	All cattle sent to slaughter meet the abattoir cleanliness requirements, or are 'clean' as described in Resource 1.	<input type="radio"/>		<input type="radio"/>		
	The bedding is of sufficient depth to provide comfort and hygiene for the cattle.	<input type="radio"/>				
Medium-High (MH)	Lying areas are well drained and regularly cleaned out to avoid a build-up of dirty bedding.	<input type="radio"/>		<input type="radio"/>		
	Slurry and manure in passage and feeding areas is removed at least twice daily.	<input type="radio"/>				
High (H)	Fully slatted systems without bedding are prohibited.	<input type="radio"/>		<input type="radio"/>		



KPI 20

Mutilations - Links to P5, P7		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer is aware that where mutilations are carried out, methods are available to reduce pain and distress.	<input type="radio"/>		<input type="radio"/>		
	Tail docking is not carried out.	<input type="radio"/>				
Medium-Low (ML)	Where painful procedures cannot be avoided, they should be carried out by competent and trained people.	<input type="radio"/>		<input type="radio"/>		
	Where painful procedures cannot be avoided, pain is actively managed, for example through using analgesics, or procedures under anaesthetic.	<input type="radio"/>				
	The suggested age limits and methods in Resource 11 are adopted.	<input type="radio"/>				
Medium-High (MH)	Mutilations are undesirable, and alternatives to mutilations are used wherever possible.	<input type="radio"/>		<input type="radio"/>		
High (H)	No mutilations are carried out.	<input type="radio"/>		<input type="radio"/>		



KPI 21

Management of beef bulls - Links to P4, P5, P6, P9, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Bull pens allow the bull sight and sound of farm activity.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Bulls are checked at least twice daily.	<input type="radio"/>		<input type="radio"/>		
	Bulls are allowed sufficient exercise.	<input type="radio"/>				
Medium-High (MH)	The area where the bull and cow mates is designed to avoid injuries to the bull and the cow.	<input type="radio"/>		<input type="radio"/>		
High (H)	If a bull is kept in a pen, it should include a sleeping area of >16m2.	<input type="radio"/>		<input type="radio"/>		
	For bulls heavier than 1,000kg, the sleeping area should be >1m2 for each 60kg liveweight.	<input type="radio"/>				



KPI 22

Euthanasia - Links to P5, P7		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Cattle are euthanised by adopting local legally-approved methods.	<input type="radio"/>		<input type="radio"/>		
	Sick or distressed animals are isolated and treated promptly, or euthanised humanely without delay, if treatment is not feasible or recovery is unlikely.	<input type="radio"/>				
	People responsible for euthanasia have received appropriate training.	<input type="radio"/>				
Medium-Low (ML)	Any equipment used for euthanasia is maintained in good working order, and records documenting maintenance are kept.	<input type="radio"/>		<input type="radio"/>		
	Carcases of mortalities or euthanised animals are stored and protected from vermin and other animals, and disposed of by local and national permitted methods only (such as incineration, burial or rendering).	<input type="radio"/>				
Medium-High (MH)	A written policy for euthanasia is produced by working with a veterinarian and is based on recognised best international practice.	<input type="radio"/>		<input type="radio"/>		
High (H)	Methods used for euthanasia in emergency or disease control situations have approval from the appropriate local government agency.	<input type="radio"/>		<input type="radio"/>		

**KPI 23**

Transport - Links to P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Handling for transport is carried out by trained people.	<input type="radio"/>		<input type="radio"/>		
	Animals which are sick, weak, injured, or known to be diseased, are not transported.	<input type="radio"/>				
Medium-Low (ML)	Cattle in transport and awaiting market or slaughter are protected from adverse weather and high temperatures.	<input type="radio"/>		<input type="radio"/>		
	No electric goads are used.	<input type="radio"/>				
	Cattle are not pulled or lifted by the tail, ears or limbs.	<input type="radio"/>				
	Sticks are not used for hitting cattle.	<input type="radio"/>				
	The following animals are not transported unless under the direction of a veterinary surgeon:	<input type="radio"/>				
	Sick or injured cattle or calves.	<input type="radio"/>				
	Animals unable to move independently without pain or walk unassisted.	<input type="radio"/>				
	Animals with a severe open wound, or prolapse – where moving them would cause additional suffering.	<input type="radio"/>				
	Heavily-pregnant cows (where more than 90% of the gestation period has passed) unless being transported for veterinary treatment.	<input type="radio"/>				
	Cows which have given birth during the last 7 days.	<input type="radio"/>				
Medium-High (MH)	Animals are handled using low-stress methods, equipment, and facilities that calm animal movement.	<input type="radio"/>		<input type="radio"/>		
High (H)	As previous.	<input type="radio"/>		<input type="radio"/>		

**KPI 24**

Calving beef cows - Links to P2, P4, P5, P10, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer is aware of the disease and welfare advantages of calving cows in a separate, hygienic and clean bedded area.	<input type="radio"/>		<input type="radio"/>		
	Cattle that are calving are kept separate from other livestock, other than calving cows.	<input type="radio"/>				
Medium-Low (ML)	There are appropriate facilities for cows to give birth.	<input type="radio"/>		<input type="radio"/>		
	Sire (bulls) are selected to help to ensure that cows are able to calve without calving problems (dystokia).	<input type="radio"/>				
	If individual calving pens are used:	<input type="radio"/>				
	a) the calving pens is at least 12m2	<input type="radio"/>				
	b) cows do not remain in a calving pen for more than 48 hours	<input type="radio"/>				
Medium-High (MH)	Cows in the calving pen can see and hear other cows.	<input type="radio"/>		<input type="radio"/>		
	The calving pen is equipped with a means of restraint to allow human care of the calving cow.	<input type="radio"/>		<input type="radio"/>		
High (H)	As previous.	<input type="radio"/>		<input type="radio"/>		

**KPI 25**

Management of calves: calf housing - Links to P4, P5, P6		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The housing area and pens for calves provides a safe, comfortable and hygienic environment.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Calf housing is well ventilated.	<input type="radio"/>		<input type="radio"/>		
	Calf housing is lit to allow for checking of animals and for normal calf behaviours.	<input type="radio"/>				
	Calves have clean, dry bedding.	<input type="radio"/>				
	Calf housing is not fully slatted.	<input type="radio"/>				
Medium-High (MH)	The accommodation for calves is well lit, preferably by natural light, for at least 8 hours a day.	<input type="radio"/>		<input type="radio"/>		
High (H)	As previous.	<input type="radio"/>		<input type="radio"/>		

**KPI 26**

Management of calves: space - Links to P4, P5, P6		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Calves are housed adopting local legal requirements.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Calf housing allows all calves to lie down at the same time, to rise without difficulty, and to stretch and move freely.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	The space requirements listed in Resource 10 are provided for calves.	<input type="radio"/>		<input type="radio"/>		
High (H)	As previous.	<input type="radio"/>		<input type="radio"/>		



KPI 27

Management of calves: calf feeding (including veal calves) - Links to P3		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Calves are not muzzled (a muzzle is a device to control feeding and suckling).	<input type="radio"/>				
	Artificially-reared calves and young cattle are provided with sufficient access to fresh and clean drinking water.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Pre-weaned calves are given dry, fresh, clean feed and forage daily.	<input type="radio"/>				
	Individual buckets are provided where calves are bucket-fed.	<input type="radio"/>		<input type="radio"/>		
	Feeding equipment is kept in a clean condition.	<input type="radio"/>				
Medium-High (MH)	Calves are given at least 2 milk feeds daily until 28 days, and not weaned before 5 weeks of age.	<input type="radio"/>				
	Calves more than 8 days old have access each day to dried feed or forage material containing sufficient digestible fibre of not less than 100g to 250g daily, depending on the age of the animal.	<input type="radio"/>		<input type="radio"/>		
	Roughage is supplied separately to bedding material and is available to the calves at all times.	<input type="radio"/>				
High (H)	When teat feeding, calves are given at least 3 feeds per day.	<input type="radio"/>				
	The calves diet prevents anaemia and any mineral and vitamin deficiency.	<input type="radio"/>				
	Signs of anaemia include:	<input type="radio"/>				
	Reduced appetite	<input type="radio"/>				
	Reduced growth rate	<input type="radio"/>		<input type="radio"/>		
	Pale mucous membranes	<input type="radio"/>				
	Rapid heart rate	<input type="radio"/>				
	Lethargy, inactivity and weakness.	<input type="radio"/>				
The iron content in the diet maintains a blood haemoglobin level of 9g/dl (decilitre).	<input type="radio"/>					



KPI 28

Management of calves: calf social - Links to P6		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Where there is local legislation on calf housing and group sizes, it is adopted.	<input type="radio"/>				
	Where there is no local legislation, local common practice for calf housing regard group sizes (if any) is followed.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Visual and physical contact with other calves is provided if 2 or more young animals are present.	<input type="radio"/>				
	Calves are not housed in individual hutches or pens after 8 weeks of age.	<input type="radio"/>		<input type="radio"/>		
	Physical contact with other calves is provided if 2 or more young animals are present.	<input type="radio"/>				
Medium-High (MH)	Calves are reared as pairs, or in group rearing from at least 3 weeks of age for healthy calves (calves with no pneumonia or scour diarrhoea).	<input type="radio"/>		<input type="radio"/>		
High (H)	As previous.	<input type="radio"/>		<input type="radio"/>		

KWI 1						
Animal records - Links to P10		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Records are kept of: Births Mortality (including calves stillborn) Animals sent to the abattoir	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Records are kept of: Lameness (clinical cases, non-routine foot trimming) Culling and reasons for culling (planned culls, poor fertility, etc.)	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	Records are kept of: Neck, knee, hock swellings/calluses Sole bruising (haemorrhage), sole ulcers, white line disease, interdigital infections Haematomas Abscesses Broken tails Chronic scar tissue Very dirty animals Abattoir feedback (where provided and applicable) on conditions of animals slaughtered	<input type="radio"/>		<input type="radio"/>		
High (H)	Records are kept of staff observation and checking times for cattle.	<input type="radio"/>		<input type="radio"/>		



KWI 2

Lameness - Links to P4, P5, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer is aware of lameness as a welfare issue.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Lameness is evaluated on-farm using pictures and descriptions such as those seen in Resource 1.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	If the prevalence of lameness is higher than established targets set by the company, measures are taken to improve on-farm conditions.	<input type="radio"/>		<input type="radio"/>		
High (H)	The company sets high targets for lameness prevalence, measures performance, and reports on outcomes.	<input type="radio"/>		<input type="radio"/>		



KWI 3

Body condition - Links to P4, P5, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer is aware of the impact of poor body condition on cattle welfare.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Body condition scoring is carried out by the farmer (an example of a body condition score scale is given in Resource 1 – similar scales exist in several countries).	<input type="radio"/>		<input type="radio"/>		
	The farmer is trained in body condition scoring.	<input type="radio"/>				
	Feed provided maintains adequate body condition.	<input type="radio"/>				
Medium-High (MH)	The farmer responds to the following minimum body condition scores for different parts of the beef cycle (by altering feed and management of the cattle):	<input type="radio"/>		<input type="radio"/>		
	Spring calvers					
	At calving: 2.5-3.0					
	At service: 2.5					
High (H)	At weaning or housing: 3.0-3.5	<input type="radio"/>		<input type="radio"/>		
	Autumn calvers					
	At calving: 2.5					
	At service: 2.5					
High (H)	At weaning or housing: 2.5-3.0	<input type="radio"/>		<input type="radio"/>		
	Cattle are not excessively fat (BCS>=4)					
	Annual review of body condition scores is part of the health plan.					
High (H)	Weighing of cows takes place.	<input type="radio"/>		<input type="radio"/>		



KWI 4

Respiratory disease, pneumonia - Links to P4, P5, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer is aware of the link between housing conditions and respiratory disease, particularly in young cattle.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Treatment action is taken when there are cases of respiratory disease	<input type="radio"/>		<input type="radio"/>		
	In cases of respiratory disease, measures are taken to improve on-farm conditions.	<input type="radio"/>				
Medium-High (MH)	If the incidence of respiratory disease is higher than established targets, particularly in young cattle, measures are taken to improve on-farm conditions.	<input type="radio"/>		<input type="radio"/>		
High (H)	The company sets high targets for respiratory disease performance and reports on outcomes.	<input type="radio"/>		<input type="radio"/>		



KWI 5

Cattle cleanliness - Links to P4, P5, P7, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer is aware of cattle cleanliness as a hygiene and welfare issue.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Cattle cleanliness is evaluated at the slaughter plant using pictures and descriptions such as those seen in Resource 1.	<input type="radio"/>		<input type="radio"/>		
	If cattle are dirty at the slaughter plant, the farmer is informed.	<input type="radio"/>				
Medium-High (MH)	If the incidence of dirtiness is higher than established targets, measures are taken to improve on-farm conditions.	<input type="radio"/>		<input type="radio"/>		
High (H)	The company sets high targets for cow cleanliness, measures performance, and reports on outcomes.	<input type="radio"/>		<input type="radio"/>		



KWI 6

Hair loss, swelLinks - Links to P4, P5, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer is aware of hair loss, swelLinks and haematomas as a welfare issue.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Hair loss, swelLinks, abrasions and haematomas are evaluated at the slaughter plant using pictures and descriptions such as those seen in Resource 1.	<input type="radio"/>		<input type="radio"/>		
	If cattle are found with hair loss, swelLinks and haematomas at the slaughter plant, the farmer is informed.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	If the incidence of hair loss, swelLinks, haematomas or abrasions is higher than established targets, measures are taken to improve on-farm conditions.	<input type="radio"/>		<input type="radio"/>		
High (H)	The company sets high targets for low levels of hair loss, swelLinks, haematomas and abrasions, and measures performance and reports on outcomes.	<input type="radio"/>		<input type="radio"/>		



KWI 7

Stereotypies - Links to P4, P6, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	The farmer is aware that prolonged repeated activities (stereotypies) can indicate a welfare issue.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	As previous.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	The farmer takes action if these stereotypies are seen: Repeated rubbing in the absence of disease Tongue rolling/aerophagia Pen or gate biting/chewing Pica (licking/chewing solid objects) Eating soil/sand/dirt Navel sucking Ear sucking Urine drinking	<input type="radio"/>		<input type="radio"/>		
High (H)	Review of actions to prevent stereotypies is included in the health plan.	<input type="radio"/>		<input type="radio"/>		



KWI 8

Social - Links to P6, P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Cattle are kept in appropriate groups according to age, size and stage of the production cycle.	<input type="radio"/>		<input type="radio"/>		
	All cattle, including bulls, are allowed the sound and view of other cattle.	<input type="radio"/>		<input type="radio"/>		
Medium-Low (ML)	Fractious (cattle which bully other cattle or are dangerous) or fully-horned cattle are not mixed with unfamiliar animals, or are removed from the group if there is bullying or injury.	<input type="radio"/>		<input type="radio"/>		
Medium-High (MH)	As previous	<input type="radio"/>		<input type="radio"/>		
High (H)	Polled breeds are used to prevent horn-related bullying.	<input type="radio"/>		<input type="radio"/>		



Transport - Links to P10		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	Legally-required stocking densities in transport are followed.	<input type="radio"/>		○		
	Journey durations are in line with local legislative requirements.	<input type="radio"/>				
	The transport is free from sharp edges or projections.	<input type="radio"/>				
	The transport allows the livestock to be inspected.	<input type="radio"/>				
	Cattle are not roughly moved onto transport that does not have ramps.	<input type="radio"/>				
	Cattle are not forced to jump on to, or off, of transport without ramps.	<input type="radio"/>				
	The transport is adequately ventilated for the temperature and loading conditions.	<input type="radio"/>				
Medium-Low (ML)	Loading ramps are designed to reduce the risk of slipping.	<input type="radio"/>		○		
	The flooring of the transport is not itself hazardous (for example, use of wire meshes or metal bars on the floor may prevent slipping, but are potentially damaging to feet and legs).	<input type="radio"/>				
	Transport flooring prevents the leakage of faeces and urine (as far as practicable).	<input type="radio"/>				
	The transport is safe and secure. For example, it has sides, partitions within the transport, and gates sufficient to safely contain the animals during transport.	<input type="radio"/>				
Medium-High (MH)	The transport has headroom that allows livestock to stand in a natural position.	<input type="radio"/>		○		
	The angle of internal and external ramps does not exceed 26.6° for adult cattle and 20° for calves.	<input type="radio"/>				
	Vehicles have a roof to protect the animals from sun and weather.	<input type="radio"/>				
High (H)	Vehicles used to transport cattle for export journeys over 8 hours, or non-export journeys over 12 hours, have ventilation and temperature monitoring equipment and alarms.	<input type="radio"/>		○		
	A ventilation system is fitted, with a minimum airflow of nominal capacity of 60 cubic metres per hour per kilo Newton of payload, that can operate independently of the vehicle engine for at least 4 hours.	<input type="radio"/>				



Slaughter - Links to P11		Observed?	Comment on observation	Achieved level?	Progress	Evidence/comment
Basic (B)	A recognised method to induce immediate insensibility is adopted at slaughter (see Introduction Section 3.5 regarding stunning).	<input type="radio"/>				
	Animals are slaughtered adopting local legally-approved methods.	<input type="radio"/>				
	The slaughterhouse is aware of stunning as a welfare issue.	<input type="radio"/>				
	Stunning and killing is conducted by an appropriately trained and competent person.	<input type="radio"/>			<input type="radio"/>	
	Electro-immobilisation is not used.	<input type="radio"/>				
	Any equipment used for euthanasia is maintained in good working order, and is appropriate for the designated use, and records documenting maintenance are kept.	<input type="radio"/>				
Medium-Low (ML)	Staff are trained in, and able to explain: how to check an animal has been properly stunned; check for signs of consciousness and unconsciousness; and know what to do if an animal hasn't been properly stunned.	<input type="radio"/>				
	At least 1 welfare contact person or co-ordinator (sometimes known as an Animal Welfare Officer) is appointed to have specific knowledge, training and responsibility for welfare during slaughter.	<input type="radio"/>			<input type="radio"/>	
	In cattle lines, where the carcass must be hoisted to a bleed area, maximum stun-to-stick intervals of 60 seconds for penetrative captive-bolt, and 30 seconds for the non-penetrative captive-bolt, are adopted.	<input type="radio"/>				
Medium-High (MH)	Targets for welfare at slaughter are set: <ul style="list-style-type: none"> o Cattle not effectively rendered immediately insensible (miss stuns %) are recorded and action taken to reduce to a minimum (<1%). o Vocalisations of animals in the stunning and slaughter areas (including the race) <2%. o Slips in the lairage and raceways <3% and no animals falling. o <10% of animals require any encouragement to move through the slaughter facility. 	<input type="radio"/>			<input type="radio"/>	
High (H)	Internationally-recognised best practice methods for slaughter are adopted (for RSPCA Slaughter requirements see Resource 12).	<input type="radio"/>			<input type="radio"/>	

Notes: Beef cattle

Agriculture and Horticulture Development Board (AHDB): [Mobility Scoring: How to score your cows](#).

AHDB: [Lameness in cows: an introduction to the Healthy Feet Programme](#)

AssureWel: [Beef cattle](#)

AssureWel: [The AssureWel Manual: The AssureWel Approach to Improving Farm Animal Welfare: The Development and Use of Welfare Outcome Assessments in Farm Assurance](#)

BBSFAW Investor Briefing (August 2015): [How are Investors Using the Business Benchmark on Farm Animal Welfare?](#)

BBSFAW Investor Briefing (November 2017): [How Companies Are Using the Business Benchmark on Farm Animal Welfare](#)

BBSFAW: [The Business Benchmark on Farm Animal Welfare Report 2019](#)

British Veterinary Association: [Farm Assurance Schemes Infographic](#)

Compassion in World Farming: [Strategic Plan 2013-2017. For Kinder, Fairer Farming Worldwide](#)

COUNCIL DIRECTIVE EC 2009/1099/2009 on the protection of animals at the time of killing

COUNCIL DIRECTIVE EC 2004/1/2005 on the protection of animals during transport and related operations and amending Directives EEC 64/432 and EC 93/119 and Regulation EC 97/1255

[COUNCIL DIRECTIVE 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes](#)

COUNCIL REGULATION (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations and amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97

COUNCIL DIRECTIVE: European Communities (Protection of animals kept for farming purposes) Regulations, 2000 (S.I. No. 127/2000)

Council of Europe: [Recommendation Concerning Cattle adopted by the Standing Committee on 21 October 1988](#)

Council of Europe: Treaty No. 087, [European Convention for the Protection of Animals kept for Farming Purposes](#)

DAERA (2012): [Beef Cattle - A code of practice issued under the Welfare of Animals Act \(Northern Ireland\) 2011](#)

European Commission (2015): [Animal Welfare Indicators](#)

FAO: [Water Quality for Livestock and Poultry](#)

Farmers Assuring Responsible Management (FARM): [Animal Care Version 4.0](#)

Farm Animal Welfare Committee (FAWC) was renamed to Animal Welfare Committee (AWC) on 1 October 2019. All FAWC reports listed here are available at the [gov.uk website](#).

FAWC advice on animal sentience (10 June 2019)

FAWC opinion on the welfare of cattle kept for beef production (11 February 2019)

FAWC: Evidence and the welfare of farmed animals – part 2: evidence based decision making (19 July 2018)

FAWC advice on sustainable agriculture and farm animal welfare (24 February 2017)

FAWC opinion on calf nutrition (26 November 2015)

FAWC advice on space and headroom allowances for transport of farm animals (17 September 2013)

FAWC report on farm animal welfare: health and disease (29 November 2012)

FAWC opinion on contingency planning for farm animal welfare in disasters and emergencies (15 March 2012)

FAWC advice on sustainable intensification of livestock agriculture (3 February 2012)

FAWC report on education about farm animal welfare (15 December 2011)

FAWC report on economics and farm animal welfare (7 December 2011)

FAWC opinion on the welfare of animals killed on-farm (29 March 2018)

FAWC opinion on CCTV in slaughterhouses (3 February 2015)

Gov UK: [The Welfare of Farmed Animals \(England\) Regulations 2007](#)

Gov UK: [Animal Welfare Act 2006](#)

Gov UK: [Welfare of Animals at the Time of Killing \(England\) Regulations 2015](#)

[ICAR: Technical Series and Proceedings](#)

IFC (2014): Good Practice Note: Improving Animal Welfare in Livestock Operations (2014)

World Organisation for Animal Health (OIE): [Terrestrial Animal Health Code \(2019\)](#)

OIE Terrestrial Animal Health Code (2019): [Chapter 7.5, Slaughter of Animals](#)

OIE: [The OIE Strategy on Antimicrobial Resistance and the Prudent Use of Antimicrobials \(2016\)](#)

Red Tractor: [Beef & Lamb Standards Version 4.1 \(updated 1 June 2018\)](#)

RSPCA: [Welfare Standards for beef cattle \(February 2020\)](#)

Share Action: [What we do](#)

Vet Sustain (2019): [The Veterinary Sustainability Goals](#)

Welfare Quality Network: [Assessment Protocols](#)

Welfare Quality: [Assessment protocol for cattle \(without veal calves\)](#)

World Bank Group: [General Environmental, Health and Safety \(EHS\) Guidelines, \(April 2007\)](#)

WHO: [Water Safety and Drinking Water Quality Guidelines](#)

[World Vet Antimicrobial Stewardship: McDonald's Corporation – Vision for Antimicrobial Stewardship in Food Animals \(March 2015\)](#)