



SHELTER QUALITY

Welfare Assessment Protocol for Shelter Dogs

S. Barnard, C. Pedernera, A. Velarde, P. Dalla Villa

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SHELTER QUALITY. Welfare Assessment Protocol for Shelter Dogs
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1 Introduction



The *Shelter Quality* protocol is a deliverable of the project 'Tools for the assessment, classification and management of urban stray dog and cat populations' (IZS AM 05/10 RC), coordinated by the Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise 'G. Caporale' and financed by the Italian Ministry of Health.

The project aim was to develop innovative and efficient tools for the management of stray dog and cat populations in urban areas. A crucial topic, strictly related to stray dog population management, concerns shelter facilities. No-kill policies, now widely adopted by many legislators, lead to the proliferation of long-term sheltering for stray dogs in many countries. Gaps in the management systems and an imbalance between high numbers of dogs entering the shelter and low adoption rates, result in high percentages of animals that are likely to spend most part or all their life in a confined condition. In this scenario, animal welfare becomes a critical issue. On the other hand, where dogs are humanely destroyed if not adopted, a major effort has to be made to maximise successful adoptions. There is evidence that new owners prefer dogs that positively interact with



people and that do not exhibit abnormal or undesirable behaviour. Dogs positively coping with their environment are also more likely to be rehomed. Therefore, improving the welfare of kennelled dogs helps not only to increase their well-being but also to increase their chances of adoption.

Previous works reported that the shelter environment can be detrimental for dogs, especially when housed for lengthy periods of time. Environment enrichment (both physical and social), as well as appropriate management procedures, can improve the animals' coping abilities and adaptation. Due to individual variability, dogs may perceive the same stressors differently, suggesting that animals could exhibit different behavioural responses when housed in similar conditions. It is therefore important to have a tool that allows a direct evaluation of the real welfare state of dogs housed in shelters, by observing their individual reaction to the environment they are kept in.

The *Shelter Quality* protocol was developed with the aim of providing a valid, reliable and practical tool for assessing dog welfare in long term shelters. This protocol was built around the four welfare principles (good feeding, good housing, good health and appropriate behaviour) described by the Welfare Quality® project for on-farm assessments of livestock species (Welfare Quality®, 2009). The emphasis is on animal-based measures (also called outcome or performance measures) in an attempt to estimate the actual welfare state of the animals in terms of, for instance, their behaviour, health or physical condition. Such measures have

inherent advantages over management and resource-based measures (also referred to as input or design measures). Since welfare is a condition of the animal, animal-based measures are likely to be the most direct reflection of their welfare state. By applying this approach, the assessment system will be partially independent of the shelter facilities and management parameters.

The concepts of inputs and outcomes can also draw the basis for a risk assessment approach, as outlined by a recent EFSA scientific opinion on the use of animal-based measures to assess animal welfare (EFSA 2012). This analysis helps identifying the so called *hazards*, meaning those factors that could potentially impair the welfare of an animal. When measuring the animal responses to their environment, we are actually measuring the *consequences* of one or multiple factors that are acting upon that animal.

The link between hazards and consequences provides objective and scientific evidence of the predictive capacity of specific welfare measures.

Risk assessment also offers the basis to perform a risk management process, in order to define recommendations aimed at maximising dogs' quality of life in a shelter environment.

The *Shelter Quality* is an innovative protocol that proposes a completely new approach to companion animal welfare assessment. It has the potential of representing a precious tool for Competent Authorities, shelter managers and NGOs personnel wanting to investigate the welfare status of long-term sheltered dogs. The areas of application of the *Shelter Quality* protocol



are broad; it could help to identify critical areas needing intervention and might be used, in the future, as a reliable and scientific tool to rank rescue and commercial shelters according to the level of welfare they are providing to the housed dogs.

Scientific research is still on-going to identify areas of improvement of the protocol, to create the first database system for systematic recording of standard indicators and to generate new knowledge on the welfare of confined dogs.





Shelter Quality Protocol



2.1 Contents

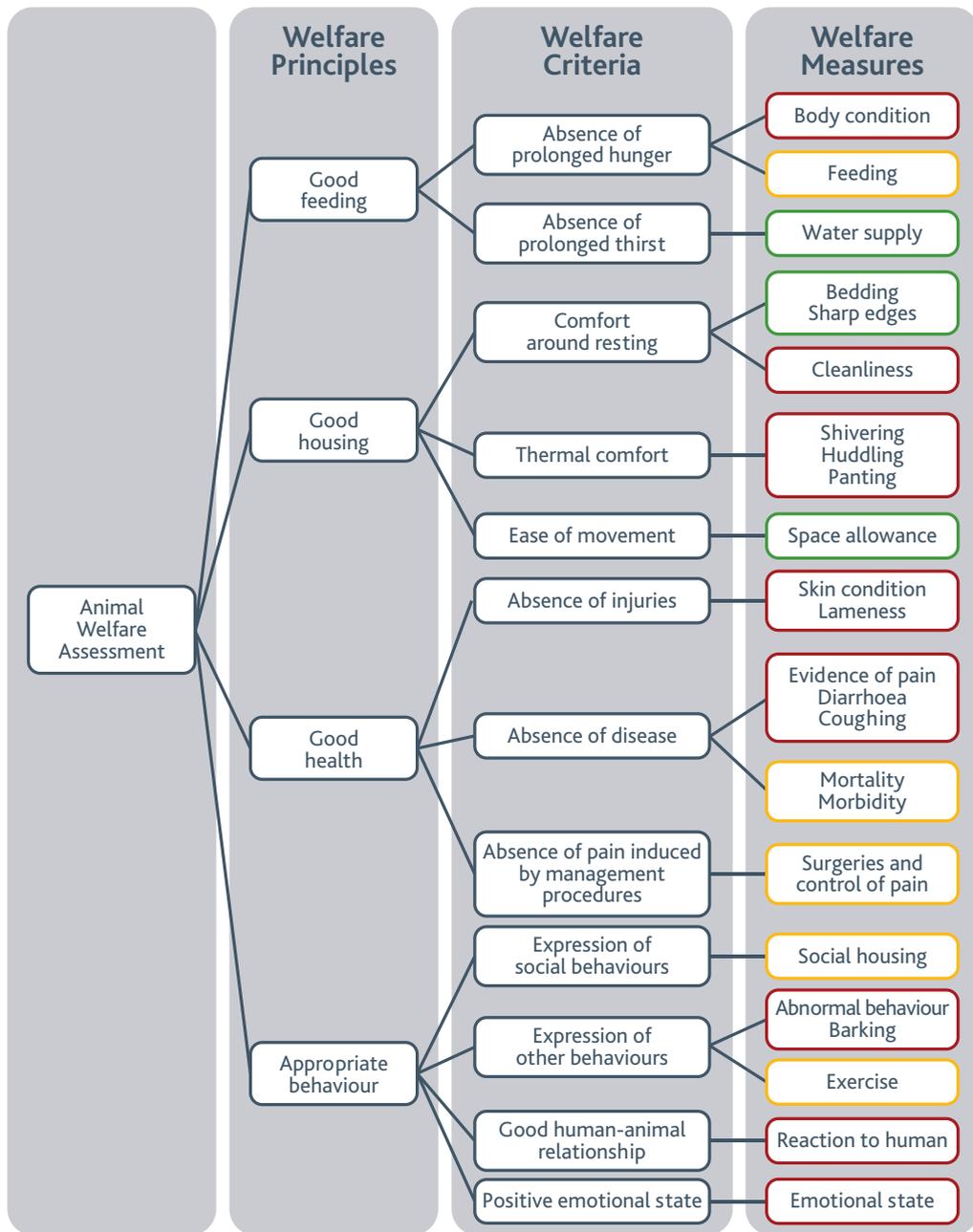
Measures and procedures to assess the welfare of the domestic dog, were identified and selected following expert opinions and a thoughtful study of the available scientific literature on dog biology, health, welfare and behaviour. The protocol was validated through field testing, that evidenced its feasibility and reliability. The measures were selected to assess specific welfare criteria, reflecting management procedures (management-based measures), housing environment (resource-based measures) and direct welfare outcomes (animal-based measures). Choice relied on the feasibility of assessment considering both time and easiness of the measurement. A summary of all measures described in the protocol are included in Figure 1, with reference to the welfare criteria and principle they refer to.

Since welfare is the outcome of multi-factorial effects, multiple variables need to be



Figure 1. Welfare measures

Summary of the animal (red), management (yellow) and resource (green) based measures described in the protocol according to the welfare principles and criteria.



considered when applying the protocol. The shelter evaluation will include three different levels of assessment:

Measures taken at **shelter level** (Chapter 3) refer to the overall dog population in the shelter. They include mainly management-based indicators (e.g. feeding regimen, exercise routine), and the emotional state profile (animal-based measure) to be recorded at the end of each shelter assessment.

Measures taken at **pen level** (Chapter 4) are assessed observing each housing environment and all the animals confined in it (irrespective of the number). Since assessing all pens in a shelter would be very time consuming, before starting the evaluation a sample of pens will be randomly chosen by the assessor. Parameters measured at pen level are both resource-based (e.g. space allowance, bedding) and animal-based (e.g. behaviour, diarrhoea).

Measures taken at **individual level** (Chapter 4) are assessed observing each individual animal. All measures are animal-based and include health parameters and the human-animal relationship score. Assessments at individual level will be applied to a sub-sample of the dogs housed in the pre-selected pens.

This protocol contains methodological information on how to carry out the assessments, a description of all selected measures including the welfare criteria they apply to, the type (animal, resource, management), what the assessor needs to record during the visit to the shelter, scoring indication useful for future analysis, and finally some examples. A list of references relevant

to the study is also included at the end of the document.

2.2 Methodology

Start of assessment

The assessment starts when the assessor positions in front of the first pen and starts recording.

End of assessment

The assessment ends when the assessor finishes recording the last pen.

Scoring levels

Measures will be taken according to three scoring levels:

- *Shelter*: the measure is recorded evaluating the shelter as a unit.
- *Pen*: the measure is recorded evaluating each pen as a unit and observing all the animals confined in it (irrespective of the number of animals)
- *Individual*: the measure is recorded evaluating each animal as a unit.

Shelter routine

Since dogs have to be assessed while housed in their home pen, before planning your visit to the shelter check the daily routines with the manager, also try to avoid interfering with staff work.

Sample size indications

- Include in the sample only dogs **over 6 months of age** and that have been in the shelter for **two months or more**.
- According to the total number of dogs housed, the sample of animals to be



Table 1. Sample size

Total number of housed dogs	Number of animals to assess
up to 59	30
60-89	40
90-139	50
140 over	60

assessed will vary according to **Table 1**. Hospitalized dogs will not be included in the assessment and therefore they will not be considered when calculating the sample size.

- Remember that the sampling should be in a **random** form: only assess a maximum of three dogs per pen and the pens you select should cover the different facilities in the shelter and the different range of ages. Twenty is the maximum number of pens suggested for a feasible assessment in terms of time. The assessment of the shelter should be carried out on a single day.
- Box 1 shows a practical example of how an assessor can chose the pens on a random form starting from the map of the facility.

Behaviour of the observer during assessment

The assessor should stand in front of the pen, 2 meters from the fence, still, passive, making no loud noise and not interacting with the animals unless required by the protocol. When interacting with the animal, the assessor should keep a neutral, relaxed posture, if the animal is showing excessive fear or distress the assessor should interrupt the assessment. Get everything ready for scoring before positioning in front of the pen. When the number of animals housed together exceeds 5, or when the pen is large and animals are hardly visible, the assessor may enter the pen and carry out the assessment from inside.

Procedures have to be followed as described, however people and dogs' SAFETY has to be a priority.

Assessment kit

Scoring sheets, clipboard, stop-watch, pen, tape meter. Do not wear dark hats or sunglasses.

Annexes

At the end of this protocol, a questionnaire for the shelter manager and practical record forms to print for data collection, are included.



Box 1. Example of a random selection of pens to carry out before starting the assessment of a shelter

If this shelter hosts 300 dogs housed in four different modules of pens, according to Table 1 60 dogs should be assessed. Twenty is the maximum suggested number of pens to assess (3 dogs per pen). A random selection of pens should include all modules, in a balanced order: $20\text{pens}/4\text{modules} = 5\text{pens}$ to assess per module. The map shows a possible correct sampling to be carried out before starting the evaluation. If a copy of the map of the facility is not available, the assessor can do a sketch on paper.



Courtesy of Safe the Dogs and Other Animals Onlus





3 Measures scored at SHELTER level



This chapter includes the description of all measures to be recorded considering the shelter as a unit. Most measures are management-based, and should therefore be recorded with the help of the shelter manager (or other competent person) by compiling the *Management Questionnaire* in Annex 1. Furthermore, at the end of the assessment, the assessor will evaluate the emotional state of all observed animals compiling the *Emotional State Profile* (Annex 5).

3.1 General information

Description Before starting the assessment, general information about the shelter must be recorded. A copy of the shelter map or a sketch of the facility layout will help the assessor identifying the pens to be assessed.



What to record

- Name of the assessor carrying out the evaluation
- Day of assessment
- Shelter identification or name
- Number of dogs in the shelter the day of the visit (excluding hospitalised animals)
- Number of hospitalised animals the day of the visit
- Temperature (°C) and humidity (%) the day of the visit

3.2 Social housing

Type of measure Management based

Welfare criteria Expression of social behaviour

Description Dogs are social animals and there is evidence that isolation is detrimental for their welfare. Therefore, single housing should be avoided especially when dealing with long-term confinement. Isolation is acceptable when needed for clinical or safety reasons, but should be reduced at a minimum. The assessor will record the overall number of pens in the shelter housing dogs individually, in pair or in group (less than or equal to 5 or over 5 dogs) the day of the visit.

What to record

- Number of single housing pen
- Number of pair housing pen
- Number of group (≤ 5) housing pen
- Number of group (> 5) housing pen
- Total number of pens

Scoring indications Percentages of each type of housing at the shelter (%).

3.3 Exercise

Type of measure Management based

Welfare criteria Expression of other behaviours

Description Small enclosures not only discourage exercise because there is no possibility of travelling to another location, but they also restrict the type of locomotion and the ability of dogs to control their social interactions and express natural specie-specific behaviour. The assessor will ask the manager of the shelter about dogs outdoor access and exercising.

What to record

Are dogs left in an outdoor fenced area:

- Daily (30 minutes or more)
- Weekly
- No or there is not a regular routine, it depends on personnel availability

Are dogs walked on leash by shelter personnel or by volunteers:

- Daily
- Weekly
- No or walks are not on a regular base but depend on personnel availability

3.4 Surgeries and control of pain

Type of measure Management based

Welfare criteria Absence of pain induced by management procedures

Description Surgeries include sterilisation, castration and other clinical manipulations. After clinical intervention, dogs may suffer from pain associated with actual or potential tissue damage.



To reduce pain, analgesic intervention might be needed. The shelter manager is asked about post-surgical monitoring.

What to record

- Presence of operating procedures for post-surgical monitoring (Y/N)
- Presence of hospital pens (Y/N)
- Presence of protocols of analgesia (Y/N)

3.5 Mortality

Type of measure Management based

Welfare criteria Absence of disease

Description: Mortality is defined as the number of animal deaths in a defined period of time over the total shelter population. Death can occur with or without euthanasia procedure. If available, the assessor should analyse data from shelter records.

What to record

- Number of euthanasia because of health problems during the last 12 months
- Number of euthanasia because of behaviour problems during the last 12 months
- Number of deaths (other than euthanasia) during the last 12 months
- Dog shelter population (mean number of animals in the last 12 months)

Scoring indications Mortality per each category (Number of dogs that died during the last 12 months/dog shelter population)* 100

3.6 Morbidity

Type of measure Management based

Welfare criteria Absence of disease

Description Morbidity is the incidence of a disease or of all disease in a population. Since it is difficult to retrieve this information, the manager will be asked on average expenses for medical treatments per dog, including preventive medicine and disease treatments but not sterilization expenses.

What to record

- Total expenses for medical treatments in the last 12 months

Scoring indications Average medical expenses per dog per year (expenses for medical treatments in the last 12 months/dog shelter population)

3.7 Feeding

Type of measure Management based

Welfare criteria Absence of prolonged hunger

Description Food with sufficient nutritional value will allow an animal to be healthy and maintain a normal body weight. Diet-specific factors include the safety and appropriateness of the diet fed to the animals. Feeding regimen include the frequency, timing and method of feeding. Information about animal nutrition will be recorded.

What to record

- Type of diet (e.g. dry pellets, cooked food, wet/canned food)
- Special diets for puppies/old animals/hospitalised animals (Y/N)
- Feeding regime (once per day/twice per day/*ad libitum*).



3.8 Emotional state

Type of measure Animal based

Welfare criteria Positive emotional state

Description Emotional state focus not so much on what an animal does, but on how it does it, that is, its dynamic style of interaction with the environment.

After assessing all sampled pens, the assessor will take a few seconds to describe the shelter, using Visual Analogue Scales (VAS), quantifying how much an adjective represents the animals housed in that shelter. The adjectives are the following:

Adjective	Definition
Playful	cheerful, high spirits, fun, showing play-related behaviour, inviting others to play
Happy	content, pleased, not easy to upset, fits well in its environment
Friendly	sociable toward humans and other dogs, seeks for contact/interaction, shows greeting behaviour
Confident	sure, has good control on its environment, handles stress well, fearless
Nervous	uneasy, apprehensive, highly excitable, shows fast arousal, unsettled
Unsure	insecure, doubtful, hesitant, likely to show conflicting behaviour
Anxious	worried, unable to settle or cope with its environment, signs of distress
Alert	vigilant, inquisitive, attentive to outside stimuli
Boisterous	noisy, bouncy, drives attention, unrestrained, excessive barking
Attention-seeking	attracts the attention of humans, looks for an interaction, calls, most of the time in front of fence (nearer to assessor)
Quiet	silent, unresponsive, vaguely depressed, unwilling to interact with its environment
Relaxed	calm, without worries, easy going, settled in its environment

What to record

Using a **Visual Analogue Scale (VAS)**, record how much each adjective describes the animals hosted in the shelter that the assessor just evaluated.

Each VAS is defined by its left 'minimum' (Min) and right 'maximum' (Max) point.

- Min means that the expressive quality indicated by the term is entirely absent in any of the animals you have seen.
- Max means that this expressive quality is dominant across all observed animals.

Note that it is possible to give more than one term a max score; animal could for example be both entirely playful and entirely friendly.

To score each term, draw a line across the 125 mm scale at the appropriate point. Do not skip any term.

Scoring indications The measure for each adjective is the distance in millimetres from the min point to the point where the line crosses the scale.

e.g. Playful





4 Measures scored at PEN level



All pens, housing one or more of the dogs included in the sample, must be scored for the following animal and resource based measures. When arriving in front of the pen, a *Resource Checklist* (Annex 2) will be filled-in while giving the dogs the time to accustom to your presence. Subsequently, all dogs inside the pen will be observed for one minute and animal based measures will be scored (*Behavioural Observations* - Annex 3). Annex 3 includes also two health measures that have to be scored at pen level (i.e. diarrhoea, evidence of pain).

4.1 Space allowance

Type of measure Resource based

Welfare criteria Ease of movement



Description Space allowance expressed in m² per kg dog. The number and weight of animals in each pen and the dimensions of the pen are recorded and adequacy is calculated using the recommendations of Directive 2010/63/UE (Table 2). The presence of an indoor closed area and/or of an access to an outdoor area will be recorded per each pen. An indoor area is defined as a room, a prefabricated element or a fixed shelter that has closed vertical walls and a roof. The indoor area should be insulated, and screen from adverse weather condition (e.g. rain, strong wind). Movable kennels or beds will be recorded as bedding material (paragraph 4.2). Opened pens only with a roof will be scored as outdoor areas.

When measuring the pen, all available space will be considered (indoor and outdoor), whenever the dog has constant and free access to both areas.

What to record

- Enclosure length and width (m)
- Number of animal in the pen up to 20kg
- Number of animal in the pen over 20kg
- Presence of indoor closed area (Y/N)
- Presence of an outside area (Y/N)

Scoring indications Enclosure area in m² (= length x width)

Pen is adequate/inadequate for the number and weight of dogs according to Table 2.

Table 2. Minimum enclosure size requirements

These dimensions are acceptable only if animals have access to outside runs and/or daily exercise.

Weight (Kg)	Minimum enclosure size for one or two animals (m ²)	For each additional animal add a minimum of (m ²)	Minimum height (m)
Up to 20	4	2	2
Over 20	8	4	2



Box 2. Examples of space allowance recording system

PEN ID: Example 1



PEN ID: Example 2



PEN ID: Example 3

**What to record**

Pen ID	EX 1	EX 2	EX 3
Dimension	Length 2 m Width 8 m	Length 3 m Width 3 m	Length 4 m Width 3,5 m
N°animals <20kg	0	1	8
N°animals >20kg	4	1	2
Indoor area	<input checked="" type="checkbox"/> yes / <input type="checkbox"/> no	<input checked="" type="checkbox"/> yes / <input type="checkbox"/> no	<input checked="" type="checkbox"/> yes / <input type="checkbox"/> no
Outside area	<input checked="" type="checkbox"/> yes / <input type="checkbox"/> no	<input checked="" type="checkbox"/> yes / <input type="checkbox"/> no	<input type="checkbox"/> yes / <input checked="" type="checkbox"/> no

Scoring indications

Example 1	Example 2	Example 3
Enclosure area = 16 m ²	Enclosure area = 9 m ²	Enclosure area = 14 m ²
Minimum enclosure size requirement = 16 m ²	Minimum enclosure size requirement = 8 m ²	Minimum enclosure size requirement = 24 m ²
Pen is adequate	Pen is adequate	Pen is inadequate



4.2 Bedding

Type of measure Resource based

Welfare criteria Comfort around resting

Description All dogs should be provided with a warm, dry, draught-free area to ensure sufficient comfort during resting and sleeping. Ideally, bedding should be off the ground, permit to readily clean and disinfect the enclosure, and be safe (i.e. no harmful edges, no ingestible parts or filling). Assess the presence and type of bedding material available in each enclosure.

Bedding type can be extremely various, please refer to the following categories: kennel (close movable shelter, often of plastic or wood, it repairs from mild adverse weather condition, it allows the animal to hide), basket (isolate from the ground, open on the top, usually of plastic), other (includes fabric, matress, carpet, any solution not listed). If no bedding is present, don't score the bedding type, tick the box absent when

scoring the bedding condition.

The assessor will record if the bedding is adequate or inadequate: bedding will be considered inadequate if there is less than one bed per dog, if it can be harmful, if bedding material is wet or with faeces.

What to record

- Type of bedding (kennel/basket/other)
- Condition of bedding material (absent/adequate/inadequate)

4.3 Sharp edges

Type of measure Resource based

Welfare criteria Comfort around resting

Description The assessor looks for the presence of sharp edges or protrusions inside the pen (i.e. in walls, partitions, floor) or along the fence, that could be harmful for the animals.

What to record

- Presence of sharp edges (Y/N)



Box 3. Examples of bedding recording system

PEN ID: Example 1



PEN ID: Example 2



PEN ID: Example 3



PEN ID: Example 4



What to record

Pen ID	EX 1	EX 2	EX 3	EX 4
Bedding type	<input checked="" type="checkbox"/> shelter <input type="checkbox"/> basket <input type="checkbox"/> other	<input type="checkbox"/> shelter <input type="checkbox"/> basket <input type="checkbox"/> other	<input type="checkbox"/> shelter <input type="checkbox"/> basket <input checked="" type="checkbox"/> other	<input type="checkbox"/> shelter <input checked="" type="checkbox"/> basket <input type="checkbox"/> other
Bedding	<input checked="" type="checkbox"/> adeq <input type="checkbox"/> inadeq <input type="checkbox"/> absent	<input type="checkbox"/> adeq <input type="checkbox"/> inadeq <input checked="" type="checkbox"/> absent	<input type="checkbox"/> adeq <input checked="" type="checkbox"/> inadeq <input type="checkbox"/> absent	<input checked="" type="checkbox"/> adeq <input type="checkbox"/> inadeq <input type="checkbox"/> absent



Box 4. Examples of sharp edges recording system

PEN ID: Example 1



PEN ID: Example 2



PEN ID: Example 3



What to record

Pen ID	EX 1	EX 2	EX 3
Sharp edges	<input checked="" type="checkbox"/> yes / <input type="checkbox"/> no	<input checked="" type="checkbox"/> yes / <input type="checkbox"/> no	<input type="checkbox"/> yes / <input checked="" type="checkbox"/> no

4.4 Water supply

Type of measure Resource based

Welfare criteria Absence of prolonged thirst

Description Water supply will be considered hygienic when the drinker places are without faeces and without mould. The drinkers should be safe

(e.g. no sharp edges, no rusty areas) and functioning: if the containers (e.g. bowl, bucket) are filled manually by shelter staff, the assessor will consider them functioning if they are full, and not functioning if they are empty at the moment of the assessment.

The assessor will record the type of drinker, if they are functioning or not and



the cleanliness of the water. In addition, the risk of injuries due to drinkers will be checked. Water facilities will be considered adequate if drinkers are functioning, clean and safe, if one of these is negative, the score will be inadequate.

What to record

- Type of drinkers (i.e. bowl, trough, bucket, nipple, automatic fountain, other)
- Drinkers are functioning (Y/N)
- Water is clean (Y/N)
- Drinkers are safe (Y/N)

Scoring indications

- Water facilities are adequate/inadequate
- Water is clean

4.5 Diarrhoea (Enteric disorders)

Type of measure Animal based

Welfare criteria Absence of disease

Description Diarrhoea can be an indicator of enteric disorders. It is defined as the passage of faeces that contain excessive amounts of water, the stool liquid to various degrees. When group housed, the presence of diarrhoea cannot be associated to an individual dog. Thus, the assessor will record the presence of diarrhoea (liquid manure) in the pen.

What to record

- Presence of visible liquid manure in the pen (Y/N)

Scoring indications Proportion of pens with evidences of diarrhoea on the total assessed in shelter (%).

4.6 Thermal comfort

Type of measure Animal based

Welfare criteria Thermal comfort

Description **Panting:** dog pants for physical exertion when ambient temperature is warm. **Shivering:** it is a physical response to cold, especially if associated to **huddling**.

The assessor will stand 2 meters from the fence for 1 minute without interacting with the dogs, and then will record the observed behaviour. Each behavioural parameter can be defined as follows:

Panting: increased frequency of inhalation and exhalation in combination with the opening of the mouth

Shivering: a clear trembling of the body

Huddling: two or more animals resting in close contact or on top one with another

What to record

- Number of animals panting per pen
- Number of animals shivering/huddling per pen

Scoring indications Proportion of animals panting, shivering or huddling on the total assessments in the shelter (%).

4.7 Barking level

Type of measure Animal based

Welfare criteria Expression of other behaviours

Description Noise levels in dog shelters may cause hearing damage and public disturbance. Bark can be defined as a staccato, short vocalisation. The assessor will record the number of dogs barking when arriving in front of each pen, after



1 minute of observation. Furthermore, after assessing all pens, the assessor will record barking level using a visual analogue scale (VAS, see section 3.8 for scoring procedure).

What to record

- Number of dogs barking during one minute observation (only in the observed pen).
- Perceived noise level in the shelter (VAS) when scoring emotional state (Annex 5)

Scoring indications

- Proportion of dogs barking over the total assessments in the shelter (%).
- Barking level in the shelter using the VAS scoring

4.8 Abnormal behaviour

Type of measure Animal based

Welfare criteria Expression of other behaviours

Description Confinement in a rescue shelter can result in a situation of unpredictability for the dog, often causing fear and stress in the short term. Abnormal behaviour in the dog may take the form of a reduced behavioural repertoire and/or the development of stereotypies defined as repetitive, unvarying and apparently functionless behaviour patterns. Such expression may indicate poor welfare and increase the likelihood of injury or susceptibility to disease. While completing the assessment of each pen unit, the assessor will record if any abnormal behaviour was observed. Abnormal behavioural patterns can be defined as follows:

ACTIVE REPETITIVE

Circle: repetitive, unvaried circling around pen, or walking in small circles.

Pace: repetitive pacing, in a fixed route, usually along a fence

Whirling: repetitive turning around and chasing tail

Wall bounce: repetitive jumping at wall, rebounding off it

OTHER COMPULSIVE BEHAVIOUR

Self-mutilation: caused by repetitive grooming or self-biting, can cause visible skin lesions

Environment related: compulsive licking ground or licking/chewing fence, bedding or other object in a compulsive way, or uninterrupted digging/scratching

What to record

- Presence/absence of dogs showing active repetitive or other compulsive behaviour.

Scoring indications Proportion of abnormal behaviour over the total number of animals assessed in the shelter (%).

4.9 Evidence of pain

Type of measure Animal based

Welfare criteria Absence of disease

Description Pain has been defined as an unpleasant sensory and emotional experience. Animals that suffer and are in pain may appear depressed and non-responsive to surrounding, remaining quiet on a recumbent position, avoiding contact, or growling as an unfamiliar person approaches. The assessor should



check for animals showing signs of discomfort or pain inside the pen.

What to record

- Number of dogs showing sign of discomfort or pain.

Scoring indications Proportion of animals in pain over the total assessed in the shelter (%).

Box 5. Examples of evidence of pain recording system

PEN ID: Example 1



What to record

Pen ID	EX 1
N° animals in pain	1





5 Measures scored at INDIVIDUAL level



A sample of dogs will be selected to assess human-animal relationship and general physical conditions.

The assessment is carried out observing one animal at the time by standing outside the pen, next to the fence. When the number of animals housed together exceeds 5, or when the pen is large and animals are hardly visible, the assessor may enter the pen and carry out the assessment from inside. Shelter staff should allow the entrance to a pen, according to the dogs' level of sociability, safety of animals and people has to be a priority. If an animal is showing excessive signs of fear, to avoid unnecessary stress, do not force contact.

Animals assessed within one pen should be sampled in a random order.

Suggestion: when in front of the pen, chose one animal at the **front** , one in the **middle** and one in the **rear**. If all animals come next to the fence assess one from your right one of the middle and one on your left. Select all subjects before starting the assessment.



Age category of the assessed animal will be estimated considering: young (6 months-2 years old), adult (3 years-6 years old) and geriatric (over 7 years old) dogs.

Measures assessed at individual level are included in Annex 4.

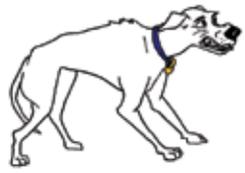
5.1 Reaction toward human

Type of measure Animal based

Welfare criteria Good human-animal relationship

Description Fear and aggression are among the most common behavioural problem that impair interaction between dogs and human beings, thereby representing a failure in communication between the two species, also decreasing chances of adoption. In presence of an unfamiliar person the dog can show:

0_No signs of fear or aggression (decreasing

Table 3. Description of a dog typical behaviour and posture according to the test response		
Score	Description	
0-no signs	No signs of fear or aggression, posture is neutral, relaxed looking at or ignoring the assessor, or friendly/sociable, decreasing distances and/or greeting the assessor.	
1-fear	Signs of fear, associated to low or very low postures, often increasing distances or hiding from assessor, ears back, eye contact brief and indirect, tail hangs low or tucked between legs.	
2-defensive aggression	Sign of fear and of defensive aggression, body lowered, weight over rear legs, tail down tense or tucked between legs, hackles raised, ears back, pupils dilated, muzzle tense, nose wrinkled, snarled teeth exposed.	
3-offensive aggression	Signs of aggression, weight forward, tail stiff, raised, ears erect forward, bared teeth and lips curled, eyes staring, hackles may be up.	



distances, friendly/sociable or neutral)

- 1_Fear without signs of aggressions (shows low or very low postures)
- 2_Fear with signs of aggression (defensive posture)
- 3_Aggression without signs of fear (offensive posture)

Postures and behavioural patterns typical of the above reactions are described in Table 3.

The assessor will approach the fence of the pen and record the dog reaction during a short test situations:

1. In front of fence, standing and ignoring the dog for 30 seconds (Figure 2.a)
2. In front of fence, crouched and talking

gently to the dog for 30 seconds (Figure 2.b)

If the assessor has to enter the pen, the test procedure will be the same: standing and ignoring the dog for 30 seconds, crouching and talking to the dog gently for another 30 seconds.

The animal and the assessor's safety are a priority, do not enter the pen if a dog is showing aggressive signs.

What to record

- Record if the dog shows any fearful and/or aggressive reactions during the test (score 0-3)

Scoring indications Proportion of dogs in the shelter showing fear/aggression toward an unfamiliar person

Figure 2. Reaction toward human, short test situation

Behaviour of the assessor when carrying out the short test to score the dog's reaction toward humans: step 1 (A) standing and ignoring the dog for 30 seconds, step 2 (B) crouched and talking gently to the dog for 30 seconds.



5.2 Body condition

Type of measure Animal based

Welfare criteria Absence of prolonged hunger

Description Food intake should allow an animal to maintain normal body weight, and meet the normal daily requirements to keep dogs fit and healthy.

The ideal situation is for the assessor not to touch the animals. The score should be only visual. For the purposes of this welfare assessment, the ability to detect animals which are at an inappropriate condition is the main objective. Thus a simple classification of too thin, adequate and too heavy will suffice. Use the body condition system below.

What to record

The animal body condition score (BCS) is:

- Too thin
- Adequate
- Too heavy

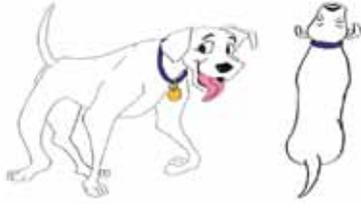
If it is not possible to assess it because of the fur of the dog leave blank.

Scoring indications Proportion of dogs in the shelter showing an inappropriate (too thin or too heavy) BCS (%)

5.3 Cleanliness of the animals

Type of measure Animal based

Welfare criteria Comfort around resting

Score	Description
Too thin	<p>Bones easily visible (i.e. ribs, pelvis, lumbar vertebrae); loss of muscle mass, obvious waist and abdominal tuck.</p> 
Adequate	<p>No excess of fat covering; observable waist when viewed from above, abdominal tuck when viewed from side.</p> 
Too heavy	<p>Excessive fat cover, ribs not palpable; fat deposit on neck and limbs; waist absents and abdominal distension present.</p> 



Box 6. Examples of body condition recording system

PEN ID: Example 1



PEN ID: Example 2



PEN ID: Example 3

**What to record**

Pen ID	EX 1	EX 2	EX 3
Body condition	<input type="checkbox"/> adequate	<input checked="" type="checkbox"/> adequate	<input type="checkbox"/> adequate
	<input checked="" type="checkbox"/> too thin	<input type="checkbox"/> too thin	<input type="checkbox"/> too thin
	<input type="checkbox"/> too heavy	<input type="checkbox"/> too heavy	<input checked="" type="checkbox"/> too heavy

Description The coat should be clean and dry, free from urine or faeces. Cleanliness of the body parts is defined as the degree of dirt on the body (splashing). Assess the coat of the dog and look for wet or dirty areas with faeces. The assessment is visual on ONE side of the body. Make sure the dog you score is standing up.

What to record

- The animal is clean
- The animal is dirty/wet (separate or continuous splashing or wet areas)

Scoring indications Proportion of dogs in the shelter showing dirty or wet areas (%)



Box 7. Examples of cleanliness of the animal recording system

PEN ID: Example 1



PEN ID: Example 2



What to record

Pen ID	EX 1	EX 2
Cleanliness	<input type="checkbox"/> clean <input checked="" type="checkbox"/> dirty/wet	<input checked="" type="checkbox"/> clean <input type="checkbox"/> dirty/wet

5.4 Skin condition

Type of measure Animal based

Welfare criteria Absence of injuries

Description The evidence of hair loss, skin lesions and abnormal swelling or signs of inflammatory reaction, irritation such as scratching, biting or licking are indicator of poor welfare and may be related to the enclosure but also to health problems.

WOUNDS including when skin is torn, cut or punctured (an open wound), here we include lick dermatitis. Count both scratches (surface penetration of the epidermis) and wounds (penetration of the muscle tissue). Wounds will be scored only if bleeding or if larger than 2 cm. Healed wounds will not be assessed.

HAIR LOSS Normally covers extensive areas with no fur. Assess the presence of hair loss areas, including dermatitis.

SWELLING is a transient abnormal enlargement of a body part or area, can be due by local infections/abscesses. Assess the presence of visible swelling areas.

ECTOPARASITES Dogs are susceptible to several parasites. Common ectoparasites, as ticks, mites and fleas, can serve as vector for several infectious agents including zoonotic ones, being of relevant interest from both a medical and veterinary point of view. Diverse and effective prophylactic and therapeutic treatments can be planned in shelters to minimise infestation. A high number of animals recorded with visible ectoparasites, or skin damage due to their infestation, can be an indicator of an inadequate care of the dogs, and of poor welfare. Ticks (particularly feeding adults), fleas and their faeces can be easily spotted



by observing the dog. Flea and mite infestation is also associated with the dog showing frequent itching.

Remember Skin condition is assessed by the observation of ONE SIDE of the dog's body; a wound smaller than 2 cm and/or healed will not be assessed.

What to record

- Presence of visible wounds

- Presence of hair loss areas
- Presence of visible swelling areas
- Evidences of ectoparasites (Y/N)

If the dog does not present skin issues, leave blank.

Scoring indications Proportion of dogs in the shelter showing altered skin condition over the total number of assessed dogs (%)

Box 8. Examples of skin condition recording system

PEN ID: Example 1



PEN ID: Example 2



PEN ID: Example 3



PEN ID: Example 4



What to record

Pen ID	EX 1	EX 2	EX 3	EX 4
Skin condition	<input type="checkbox"/> wounds	<input type="checkbox"/> wounds	<input checked="" type="checkbox"/> wounds	<input type="checkbox"/> wounds
	<input checked="" type="checkbox"/> hair loss	<input type="checkbox"/> hair loss	<input type="checkbox"/> hair loss	<input type="checkbox"/> hair loss
	<input type="checkbox"/> swelling	<input checked="" type="checkbox"/> swelling	<input type="checkbox"/> swelling	<input type="checkbox"/> swelling
	<input type="checkbox"/> ectoparasites	<input type="checkbox"/> ectoparasites	<input type="checkbox"/> ectoparasites	<input type="checkbox"/> ectoparasites



5.5 Lameness

Type of measure Animal based

Welfare criteria Absence of injuries

Description Lameness is the inability to use one or more limbs in a normal manner.

The observation of lameness could suggest the presence of foot wounds or other painful disease. A dog with a surgically amputated leg receive a score of 1. The dogs are observed while walking.

What to record

- 0- the animal shows no lameness
- 1- the animal is lame but is still walking
- 2- the dog is severely lame, almost or completely unable to walk

If the assessor is not able to observe the animal standing and walking, leave blank.

Scoring indications

Proportion of lame animals on the total assessed in shelter (%)

Proportion of severely lame animals on the total assessed in shelter (%)

5.6 Coughing (respiratory disorders)

Type of measure Animal based

Welfare criteria Absence of disease

Description Cough is a sudden and often repetitively occurring reflex which helps to clear the large breathing passages from secretions, irritants, foreign particles and microbes. Dogs must be observed during 2 minutes.

What to record

- Evidences of coughing (Y/N)

Scoring indications

Proportion of coughing animals on the total assessed in shelter (%)

Box 9. Examples of lameness recording system

PEN ID: Example 1



PEN ID: Example 2



What to record

Pen ID	EX 1			EX 2		
Lameness	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2



6 Sampling and practical information



The following section includes practical record forms that can be printed and compiled by the assessors during shelter visits. To help the user in the preparation process, a scheme of the order to follow when carrying out the assessment is supplied. A summary of the measures included in the 5 record forms (Annexes 1 to 5) and approximate estimated time to carry out the assessments are also presented in Table 4.

6.1 Order to carry out the protocol

1. Contact the manager of the shelter to explain the aim of your visit and to make an appointment. Take also the chance to ask the number of animals hosted at the time, this will allow you estimate the number of animals you will have to assess (according to Table 1) and prepare a sufficient number of record forms. In addition, ask him/her availability to retrieve some data from the shelter records (e.g. mortality, total



- expenses for medical treatments), you can send an e-mail with the information required, saving time at the moment of the visit.
2. Once at the shelter, take the *Management questionnaire* (Annex 1) and start filling the General information section. If the manager (or other competent person) is available, compile the remaining sections of Annex 1. Ask for a copy of the map of the facility; if it is not available, draw the map yourself, either copying an existing map, or giving a quick tour of the facility and sketching the location and modules of pens you see.
 3. Take a few minutes to define the number of pens and their random location around the shelter (as explained in Box 1), and how many animals within each pen (from 1 to 3) you need to assess. Get everything ready for the assessment (clip-board, pen, stop watch, scoring sheets in the correct order) and record the starting time (bottom of Annex 1).
 4. Place yourself in front (2 meters from the fence) of the first selected pen and visually choose the subjects of that pen to be assessed later at individual level. Then, start recording the information of the *Resource checklist* (Annex 2). Parameters that cannot be scored from outside (e.g. space allowance) can be scored later on by entering the pen.
 5. Without changing position, take the *Behavioural observation* form (Annex 3) and observe all the animals in that pen for 1 minute. At the end of the minute, score all the measures except 'abnormal behaviour' that will be assessed later.
 6. Now start observing the chosen dogs, one at the time. Per each dog, compile information included in the *Individual assessment* form (Annex 4). To score the fear/aggression test, follow the procedure described in section 5.1 of the protocol.
 7. Once all previous steps are completed (estimated time between 5 and 9 minutes/pen), score the presence or absence of animals showing abnormal behaviour (according to definitions in section 4.8). If necessary (to score resource base measures or if the number of animals in the pen is over 5 dogs), the assessor may enter the pen to finish the assessment.
 8. Move to the second selected pen and start again from point 4.
 9. Once all the sample pens have been assessed, record the end of assessment time (bottom of Annex 1).
 10. Finally, take the Emotional state profile (Annex 5) and record how much you believe each one of the listed adjectives describes the animals housed in that shelter.



Table 4.

Summary of the welfare measures included in the record forms (Annexes 1 to 5) with main sampling indications and approximate time needed to carry out the assessments parts.

Measures	Sampling	Time needed approximately
1. Management questionnaire <ul style="list-style-type: none"> - General information - Social housing - Exercise - Surgeries/pain - Mortality/Morbidity - Feeding 	Annex 1 Shelter level Score with help of shelter manager	15 min
2. Resources checklist <ul style="list-style-type: none"> - Space allowance - Bedding - Water supply - Sharp edges 	Annex 2 Pen level Score from outside/inside the pen	2 min/pen
3. Behavioural observations <ul style="list-style-type: none"> - Thermal comfort - Barking level - Abnormal behaviour - Diarrhoea - Evidence of pain 	Annex 3 Pen level Score from outside the pen	1 min/pen
4. Individual assessment <ul style="list-style-type: none"> - Body condition - Cleanliness - Skin condition - Lameness - Coughing - Reaction towards human 	Annex 4 Individual level Score from outside/inside the pen	2 min/animal
5. Emotional state profile <ul style="list-style-type: none"> - Emotional state 	Annex 5 Shelter level Score at the end of all assessments	1 min/shelter



Annex 1 - Management questionnaire

SHELTER:	DAY:	ASSESSOR:
GENERAL INFORMATION		
Name of assessor		
Day of assessment		
Shelter identification		
Number of dogs in the shelter the day of the visit		
Number of hospitalised dogs the day of the visit		
Temperature the day of the visit (°C)		
Humidity (%)		
SOCIAL HOUSING		
N° of single pens	N° of pair pens	
N° of group (<5) pens	N° of group (>5) pens	
Total N° of pens:		
EXERCISE		
Are dogs left in an outdoor fenced area	<input type="checkbox"/> Daily (30 min or more)	
	<input type="checkbox"/> Weekly	
	<input type="checkbox"/> No/not regular	
Are dogs walked on leash by shelter personnel or by volunteers	<input type="checkbox"/> Daily	
	<input type="checkbox"/> Weekly	
	<input type="checkbox"/> No/not regular	
SURGERIES / PAIN CONTROL		
Presence of hospital pens	<input type="checkbox"/> yes / <input type="checkbox"/> no	
Presence of operating procedures for post-surgical monitoring	<input type="checkbox"/> yes / <input type="checkbox"/> no	
Presence of protocol of analgesia	<input type="checkbox"/> yes / <input type="checkbox"/> no	
MORTALITY		
N° euthanasia (health problems)	N° deaths (other than euthanasia)	
N° euthanasia (behaviour problems)	Mean dog shelter population	
MORBIDITY		
Expenses for clinical treatments (12 months)		
FEEDING		
Type of diet: <input type="checkbox"/> dry pellets <input type="checkbox"/> cooked <input type="checkbox"/> wet/canned	Feeding regime: <input type="checkbox"/> once/day <input type="checkbox"/> twice/day <input type="checkbox"/> ad libitum	
Special diets for puppies <input type="checkbox"/> yes / <input type="checkbox"/> no	Special diets for hospitalised <input type="checkbox"/> yes / <input type="checkbox"/> no	
Special diets for geriatrics <input type="checkbox"/> yes / <input type="checkbox"/> no		
NOTES		
Time assessment starts _____ h		Time assessment ends _____ h



SHELTER:

DAY:

ASSESSOR:

Sketch shelter layout



SHELTER:		DAY:				ASSESSOR:			
PEN ID	Length Width								
Dimensions									
N° animals <20kg									
N° animals >20kg									
HOUSING									
Indoor area	<input type="checkbox"/> yes / <input type="checkbox"/> no								
Outside area	<input type="checkbox"/> yes / <input type="checkbox"/> no								
Bedding type	<input type="checkbox"/> shelter <input type="checkbox"/> basket <input type="checkbox"/> other								
Bedding	<input type="checkbox"/> adeq <input type="checkbox"/> inadeq <input type="checkbox"/> absent								
Sharp edges	<input type="checkbox"/> yes / <input type="checkbox"/> no								
WATER SUPPLY									
Type of drinkers	<input type="checkbox"/> bowl/bucket <input type="checkbox"/> automatic <input type="checkbox"/> other								
Works	<input type="checkbox"/> yes / <input type="checkbox"/> no								
Safe	<input type="checkbox"/> yes / <input type="checkbox"/> no								
Water clean	<input type="checkbox"/> yes / <input type="checkbox"/> no								



SHELTER:		DAY:		ASSESSOR:	
PEN ID					
N° animals/pen					
N° animal panting					
N° animal shivering/ huddling					
N° animal barking					
AT THE END OF EACH PEN ASSESSMENT SCORE PRESENCE/ABSENCE OF BEHAVIOUR					
Active repetitive (Y/N)	<input type="checkbox"/> yes <input type="checkbox"/> no				
Other compulsive (Y/N)	<input type="checkbox"/> yes <input type="checkbox"/> no				
EVIDENCE OF PAIN AND DIARRHOEA					
N° animals in pain	<input type="checkbox"/> yes <input type="checkbox"/> no				
Diarrhoea (Y/N)	<input type="checkbox"/> yes <input type="checkbox"/> no				
Active Repetitive (Circle; Pace; Social Pace; Whirling; Wall Bounce) Other compulsive behaviour (Self-mutilation; Environment directed)					



Annex 4 - Individual dog assessment

SHELTER:	DAY:	ASSESSOR:								
PEN ID										
N° animals/pen										
Animal ID										
Age class	<input type="checkbox"/> young <input type="checkbox"/> adult <input type="checkbox"/> geriatric									
REACTION TOWARD HUMANS										
Fear/Aggression test	<input type="checkbox"/> 0_no signs <input type="checkbox"/> 1_only fear <input type="checkbox"/> 2_defensive agg. <input type="checkbox"/> 3_offensive agg.	<input type="checkbox"/> 0_no signs <input type="checkbox"/> 1_only fear <input type="checkbox"/> 2_defensive agg. <input type="checkbox"/> 3_offensive agg.	<input type="checkbox"/> 0_no signs <input type="checkbox"/> 1_only fear <input type="checkbox"/> 2_defensive agg. <input type="checkbox"/> 3_offensive agg.	<input type="checkbox"/> 0_no signs <input type="checkbox"/> 1_only fear <input type="checkbox"/> 2_defensive agg. <input type="checkbox"/> 3_offensive agg.	<input type="checkbox"/> 0_no signs <input type="checkbox"/> 1_only fear <input type="checkbox"/> 2_defensive agg. <input type="checkbox"/> 3_offensive agg.	<input type="checkbox"/> 0_no signs <input type="checkbox"/> 1_only fear <input type="checkbox"/> 2_defensive agg. <input type="checkbox"/> 3_offensive agg.	<input type="checkbox"/> 0_no signs <input type="checkbox"/> 1_only fear <input type="checkbox"/> 2_defensive agg. <input type="checkbox"/> 3_offensive agg.	<input type="checkbox"/> 0_no signs <input type="checkbox"/> 1_only fear <input type="checkbox"/> 2_defensive agg. <input type="checkbox"/> 3_offensive agg.	<input type="checkbox"/> 0_no signs <input type="checkbox"/> 1_only fear <input type="checkbox"/> 2_defensive agg. <input type="checkbox"/> 3_offensive agg.	
HEALTH EVALUATION										
Body Condition	<input type="checkbox"/> adequate <input type="checkbox"/> too thin <input type="checkbox"/> too heavy	<input type="checkbox"/> adequate <input type="checkbox"/> too thin <input type="checkbox"/> too heavy	<input type="checkbox"/> adequate <input type="checkbox"/> too thin <input type="checkbox"/> too heavy	<input type="checkbox"/> adequate <input type="checkbox"/> too thin <input type="checkbox"/> too heavy	<input type="checkbox"/> adequate <input type="checkbox"/> too thin <input type="checkbox"/> too heavy	<input type="checkbox"/> adequate <input type="checkbox"/> too thin <input type="checkbox"/> too heavy	<input type="checkbox"/> adequate <input type="checkbox"/> too thin <input type="checkbox"/> too heavy	<input type="checkbox"/> adequate <input type="checkbox"/> too thin <input type="checkbox"/> too heavy	<input type="checkbox"/> adequate <input type="checkbox"/> too thin <input type="checkbox"/> too heavy	
Cleanliness	<input type="checkbox"/> clean <input type="checkbox"/> dirty/wet									
Skin condition	<input type="checkbox"/> wounds <input type="checkbox"/> hair loss <input type="checkbox"/> swelling <input type="checkbox"/> ectoparasites	<input type="checkbox"/> wounds <input type="checkbox"/> hair loss <input type="checkbox"/> swelling <input type="checkbox"/> ectoparasites	<input type="checkbox"/> wounds <input type="checkbox"/> hair loss <input type="checkbox"/> swelling <input type="checkbox"/> ectoparasites	<input type="checkbox"/> wounds <input type="checkbox"/> hair loss <input type="checkbox"/> swelling <input type="checkbox"/> ectoparasites	<input type="checkbox"/> wounds <input type="checkbox"/> hair loss <input type="checkbox"/> swelling <input type="checkbox"/> ectoparasites	<input type="checkbox"/> wounds <input type="checkbox"/> hair loss <input type="checkbox"/> swelling <input type="checkbox"/> ectoparasites	<input type="checkbox"/> wounds <input type="checkbox"/> hair loss <input type="checkbox"/> swelling <input type="checkbox"/> ectoparasites	<input type="checkbox"/> wounds <input type="checkbox"/> hair loss <input type="checkbox"/> swelling <input type="checkbox"/> ectoparasites	<input type="checkbox"/> wounds <input type="checkbox"/> hair loss <input type="checkbox"/> swelling <input type="checkbox"/> ectoparasites	<input type="checkbox"/> wounds <input type="checkbox"/> hair loss <input type="checkbox"/> swelling <input type="checkbox"/> ectoparasites
Lameness	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2									
Coughing	<input type="checkbox"/> yes / <input type="checkbox"/> no									



Annex 5 - Emotional State Profile

SHELTER:	DAY:	ASSESSOR:
----------	------	-----------

Playful |-----|
Min. |-----| Max.

Happy |-----|
Min. |-----| Max.

Friendly |-----|
Min. |-----| Max.

Confident |-----|
Min. |-----| Max.

Nervous |-----|
Min. |-----| Max.

Unsure |-----|
Min. |-----| Max.

Anxious |-----|
Min. |-----| Max.

Boisterous |-----|
Min. |-----| Max.

Att. seeking |-----|
Min. |-----| Max.

Alert |-----|
Min. |-----| Max.

Quiet |-----|
Min. |-----| Max.

Relaxed |-----|
Min. |-----| Max.

Barking level |-----|
Min. |-----| Max.



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**SHELTER
QUALITY**