### **Supplementary Material S1. Detailed description of transporters' responses.**

### People

#### Positivity. The livestock transporters interviewed all had positive attitudes towards sheep transporting, stating that they loved and derived enjoyment from their jobs. Transporters stated that they preferred carting livestock over other jobs due to its interesting and variable nature. They also appeared to hold livestock transporting in esteem:

*“But it’s an honourable job, I like it and I’d encourage anyone to do it.”3*

*Perspective taking.* Perspective taking, during which the livestock transporter attempted to cognitively view the situation and motivation as a sheep might, was common to all of the interviews, with up to 5% of each interview transcript coded to that topic. Transporters spoke of the sheep being reluctant, stubborn and having wants, and similarities were drawn between the motivations of sheep and humans.

*“Animals feel it just the same as we feel it, you don’t feel like doing much at 2 o’clock in the afternoon on a 40 degree day.”4*

Human values, such as laziness and friendship, were commonly used to explain sheep behaviour.

*“Once you’ve got them loaded they’re pretty comfortable, sitting in a group they feel safe in their own environment like with their own friends, they feel quite safe”4*

Although the transporters generally did not appear aware of the concept they were framing, most at some stage personified the sheep, attributing them with a human-like consciousness.

*“You have different situations and different personalities in sheep and stuff like that, same as humans I suppose.”5*

*Patience and experience.* When asked to define ‘difficult sheep’, transporters described animals that refused to move or were stubborn, but did not identify these as a source of stress to themselves. When asked how they respond to difficult sheep, transporters believed that persistence was the only option:

*“Well you’ve just got to persevere with them, that’s about it, because it doesn’t make any difference what you do, they won’t go. Sometimes you’ll try a different situation [...] So you just gotta think like a sheep really, that’s what they say. Just think, if they don’t want to go this way, try a different way and it might work. But sometimes it doesn’t matter which way you try, you just gotta push one up the ramp and that’s it.”5*

Overall there was a strong indication from transporters that patience and experience were key factors in determining how well a person might deal with difficult sheep and that a lack of these attributes resulted in sheep being more difficult to handle (five of six transporters).

#### Temper. Although transporters acknowledged that sheep handling can sometimes be frustrating, transporters (n=3) believed that behaviours associated with losing their temper, such as yelling and swearing, generally had negative results, making the stock harder to handle and wasting time and energy:

*“An old farmer, this is an old fella, said to me one day, he said ‘Look, you may feel a lot better after you do that, I would too’ he said ‘but to be honest with you, that’s only one, you’ve got another 680 standing out there looking at you, waiting for you to put them on that truck’. So he said, ‘No point in doing your Charlie son, you might as well just plod along, if it takes you an hour longer, so be it’ he said, ‘but at the end of the day you’re not going to be as worn out’. And he was right.”6*

A negative view of those who resorted to violence was common (n=5). Transporters indicated that people with short tempers or who physically abused the sheep were not retained in the industry, and that inexperienced livestock transporters were the most likely to perform these kinds of unacceptable behaviours.

*Prodders.* The use of tools such as electric prods and sheep rattles was not mentioned by transporters without prompting. When asked about prodder use, most (n=4) indicated that electric prodders were widely used in the sheep transport industry. One transporter initially denied they used prodders but went onto describe some situations in which they did. Some transporters were uncomfortable discussing prodders and felt that they needed to defend the practice. Transporters suggested that although prodders are used on most loads of sheep, they are used on very few sheep per load, and are most often used when turned off. All transporters agreed that used correctly, prodders were a valuable tool.

*“to me a simple shock on the backside of a sheep will scoot it up to the front of the truck but you can sit there for ten minutes with someone with a stick or a piece of poly pipe trying to move the sheep along, it’s a lot worse for the sheep and for us again. Used the right way they’re a good tool.”4*

Transporters also described the problems associated with misuse of prodders in regards to the behaviour of the sheep. They indicated that overuse led to stubborn sheep and emphasised the importance of prodding the sheep only in the correct locations on the body and when the sheep is facing in the direction it needs to run.

*Other tools.* Other tools were rarely mentioned. Four of the six transporters indicated that sheep rattles are a common tool for transporters but sticks and poly pipes were not used by transporters.

*“They’re farmer tools. Carriers don’t use them. There’s a lot of rattlers and shakers and that sort of thing around. […] Mostly the carriers, the people that deal with it all the time on a daily basis have the right tools.”4*

#### Helpers. Transporters indicated that the people assisting during handling, including farmers, farm hands and stock agents, were usually helpful, having a positive impact on ease of sheep handling (n=5). However, two transporters noted that if the helper had a negative attitude, described as being “set in their ways” or “just expect it to happen then and there and don’t really want to do the work”, this could make sheep handling harder, though they were not explicit in the precise impact this had on sheep behaviour.

### Environment

#### Facilities. Transporters were unanimous in declaring facilities, particularly loading ramps, as the biggest single factor influencing the ease with which they handled sheep (Figure 2).

*“I’d say the facilities would be 90% of the ease and the whole dynamic of the job. If you’ve got good yards, good facilities, good ramp, the job can be pleasurable. But if you haven’t it can be a nightmare.”6*

Transporters often brought up this issue in response to the question ‘what affects how easy it is to load sheep?’

*“... having good loading facilities for a start. That’s probably the biggest thing”3*

It was also reiterated by three of the six transporters when asked whether they found unloading easier or harder than loading:

*“Depends on the facilities. They can run on really good, pen up really good and then depending on where you’ve gotta unload they’ve got to walk down a steep ramp or there might be mesh that they can see through and there’s light shining under it and they just won’t run, […] yeah it just depends on the facilities.”2*

Four of the six transporters also suggested improvement of facilities when asked ‘if there were anything you could change to make sheep handling easier, what would it be?’

*“The ramps are the biggest factor, for sure. Yeah, if I could have a good ramp at every place I loaded and unloaded my work load would be cut in half, for sure.”4*

Old, poorly designed and poorly maintained yards and ramps were described as not only causing immediate difficulty in handling sheep, but also resulting in sheep that were harder to handle in the long term, after learning they can escape from inadequate yards. Size and shape of pens, fence height, position of gates, and flooring material were some of the issues raised with regards to yard design. The most commonly cited problem with ramps was that they were too short and too steep, servicing only the lower deck of the truck and forcing transporters to use the steep internal truck ramps (n=5). Transporters indicated that use of ramps that were too steep caused sheep to be more reluctant to move up and down ramps. Additionally, participants described ramps that were in a state of serious disrepair, with rotted floors and held together with fencing wire or twine.

#### Distractions. Distractions, such as shadows and noises were described as another very important factor influencing sheep handling. In particular, the reflection of light on surfaces such as pools of water and aluminium ramps and decks was seen as a strong influencing factor on how well sheep would run (n=5).

*“you might get sun glare off of a ramp or something that they’ll baulk at”4*

Other distractions described included position of shadows, novel surfaces such as bitumen, steel and mesh, and noises such as dogs barking.

#### Darkness and daylight. Time of day was perceived to be moderately important by most (n=4) of the transporters. There was a strong preference for working in daylight, and it was observed that sheep are more difficult to move in the dark.

*“natural daylight is so superior to artificial light because of the shadows and the casts and sheep don’t like running in the dark.”4*

Two of the six transporters indicated that if it was necessary to work stock after dark, having lights was critical but that positioning of these lights was also important to avoid poorly placed shadows. In contrast, one transporter observed that some breeds of sheep, particularly Dorpers, moved better at night if there are no lights, although he allowed that working in daylight was still the preference. When working during the day, four of the six transporters indicated that the angle of the sun relative to the facilities was of importance to avoid distracting reflections or shadows. In hot weather, early morning or late afternoon were preferred times to avoid exhaustion in the sheep which also impacted on ease of handling.

#### Weather. Hot weather was perceived to be less of a problem for sheep handling than cold or wet weather (n=3). Transporters observed that wet sheep were hesitant to move and reluctant to touch each other, making them more difficult to handle in inclement weather. Only two of the six transporters mentioned wind; both of these dismissed the effect as of minor importance.

### Dogs

Livestock transporters did not mention dogs without prompting and were generally dismissive of their impact (Figure 2). The consensus was that a good dog could make handling sheep much easier but the presence or absence of a dog did not appreciably impact on the behaviour of the sheep.

*“If you’ve got a good dog it’ll certainly make life easier. But it’s not the end of the world if you haven’t got one.”1*

The effectiveness of dogs interacted with a number of other factors of the sheep, including breed, experience and sex. Three of the six transporters indicated that Dorpers and Damaras were highly averse to dogs and the presence of dogs made these breeds much more difficult to handle. Previous experience with dogs was important, with sheep that were naive to dogs being described as “*more spooky*” when worked with a dog (n=2). Two transporters also noted that rams tend to attack dogs and that it was therefore harder to work rams with a dog.

### Sheep

#### Sheep experience. After facilities, sheep experience and breed were the most important factors influencing ease of sheep handling. Transporters described a balance between not enough and too much experience in sheep. They preferred sheep that had been handled or trucked at least once or twice before to those that had never been handled as naive sheep appeared not to know what was expected of them (n=5). Older sheep that had experienced minimal handling, such as self-shedding breeds, were described as difficult to handle. Five of the six transporters observed that over-handled sheep, especially hand-raised lambs, were very difficult to handle as they were too used to people.

*“If they’re over-handled they tend to be a bit sooky, they won’t […] do what you want. Under-handled, well same thing. They sort of find that happy medium, they’ll run, they’ll get the gist of what they’ve got to do. If they’ve been trucked a couple of times they generally run up alright, don’t have to push them.”1*

#### Breed. Although breed was only raised once without prompting (Figure 2), transporters emphatically indicated a strong breed component to the behaviour of sheep (n=6), differentiating Merinos, White Suffolks and cross-bred sheep from Dorpers and Damaras.

*“The Dorpers and Damaras, a lot of the South African-bred sheep really huddle together and are very hard to move on and off of trucks. The traditional cross-breds and Merinos that we’ve got here, we don’t have too much problems.”4*

Generally, transporters found Merinos and cross-breds easier to handle (n=4). Dorpers and Damaras were stated as being more difficult to handle, and one transporter postulated that this was at least partly due to the minimal handling received by these self-shedding breeds as a result of not being shorn and generally being raised on extensive operations. However, transporters also observed that the behaviour of the different breeds was varied (n=4). Damaras were described as a strongly flocking breed that tended to move as tight groups, compared to Merinos which moved in looser groups. Transporters (n=3) generally felt that Dorpers and Damaras were much easier to work without dogs, as dogs tended to make these breeds more stubborn and reluctant to move, whereas dogs generally made movement of Merinos and cross-breds easier.

#### Preparation, age and condition. A number of closely interacting sheep factors were reported as minor impacts on the ease of handling, including preparation and curfew (n=6), age (n=6) and body condition (n=5). Transporters suggested that sheep that were not curfewed from feed and water for long enough before loading tended to be slower and more stubborn during handling and more often lay down in the truck during transport.

*“Yeah they can be a bit harder to load. And you can tell, you can hear them rattling when they’re walking up the ramp, belly sloshing around. They get a bit slower I suppose, and probably a little bit more stubborn at times.”1*

Some transporters attributed this to the extra weight of feed and water in the gut making the sheep “*weak in the legs*”. Half of the transporters identified weakness generally as a problem for handling, indicating that weak sheep were more difficult to move, more inclined to sit down during handling and transport and had more trouble walking up and down steep ramps. Overly fat sheep, very underweight sheep and older sheep were recognized as those most likely to be weak.

#### Wooliness. A high degree of wooliness was reported to be a problem for handling by four of the six transporters, in part due to the effects of wool blindness on willingness to move. Sheep in full wool were reported to be reluctant to move close to another sheep, and one transporter described the wool as “Velcro” for its tendency to make moving sheep past each other difficult.

#### Sex. Transporters never raised the topic of sheep sex without prompting (Figure 2) and when asked about its impact on handling, three of the six transporters stated that it was not important. One transporter indicated that rams could be more aggressive, and two observed that rams would attack working dogs rather than retreating as ewes and wethers did. Wethers were perceived to be behaviourally the same as ewes. Overall transporters believed that sex was not a significant factor in the ease of sheep handling.

#### Unpredictability. In addition to the factors described above, transporters described an innate characteristic of sheep that gave a degree of uncertainty to their handling. Each transporter expressed this slightly differently, but the overall concept was that even if all the circumstances in which sheep are handled, such as facilities, breed, and weather, are known, it is impossible to predict with certainty how each individual will behave. This was a theme that pervaded the interviews, with each opinion on the factors described above given with the caveat that there are no guarantees.

*“Yeah you can have a good run or you can have a bloody bad run, so. Nothing’s really ... you can never really predict it.”3*

Transporters described the importance of the individual sheep in the process of handling, using statements such as *“You get your good and your bad”* and *“It all depends on the animal itself”*, and this appeared to be independent of the other factors described.