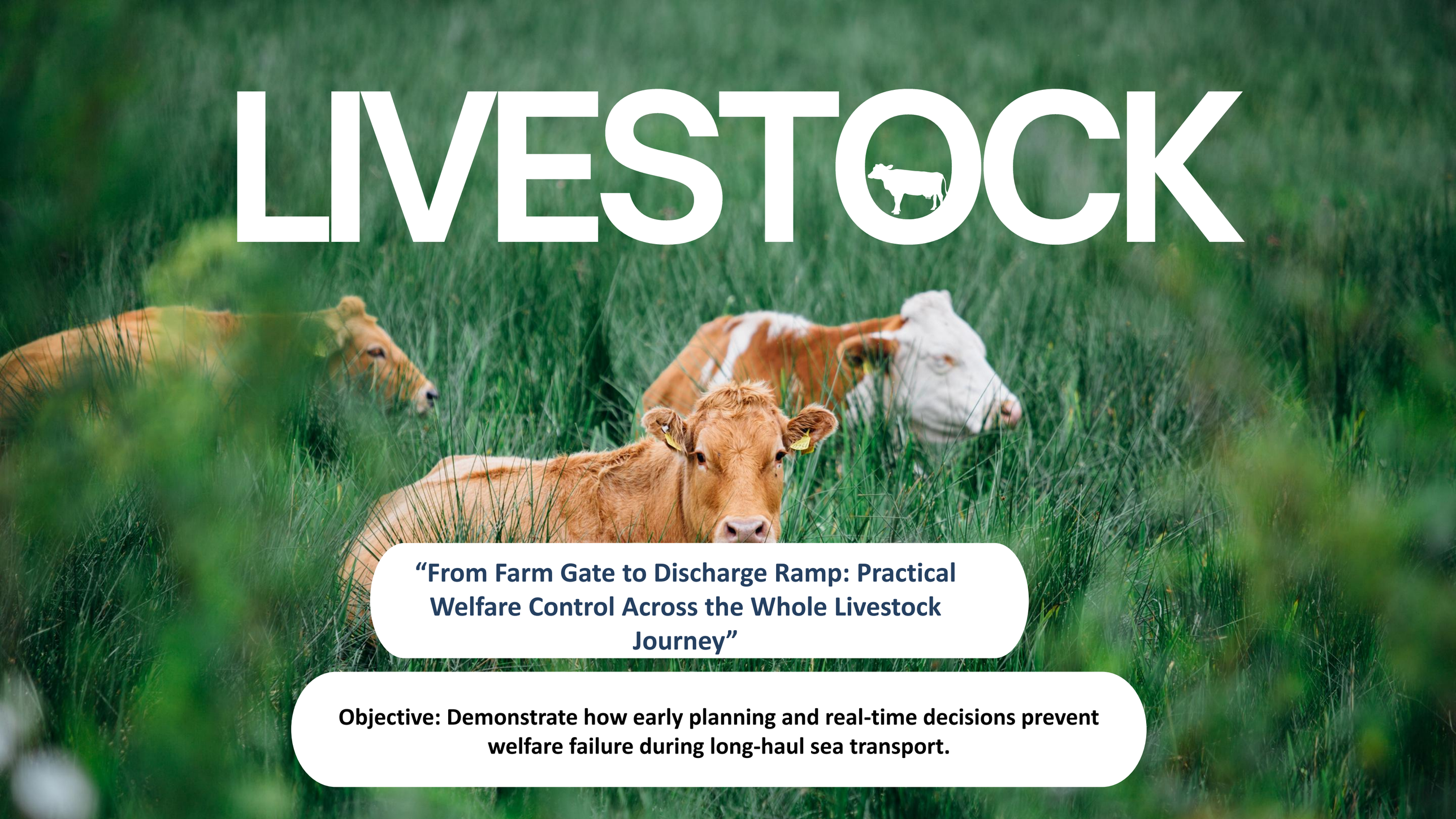


“From Farm Gate to Discharge Ramp: Practical Welfare Control Across the Whole Livestock Journey”

Objective: Demonstrate how early planning and real-time decisions prevent welfare failure during long-haul sea transport.

Practical Aspects of Livestock Transport by Sea

Ensuring Animal Welfare in Long-Distance Journeys – Protocols, Planning, Operational Management, Contingency Measures, and Lessons Learned from Australian-Middle East Routes"

Presenter: Dr. Capt. Issa Hasan, Capt. Amin Al Qawasmeh,

Event: WOAH Whole Journey Scenario Workshop, Amman, Jordan, January 14, 2026 (12:15-12:45 Slot)

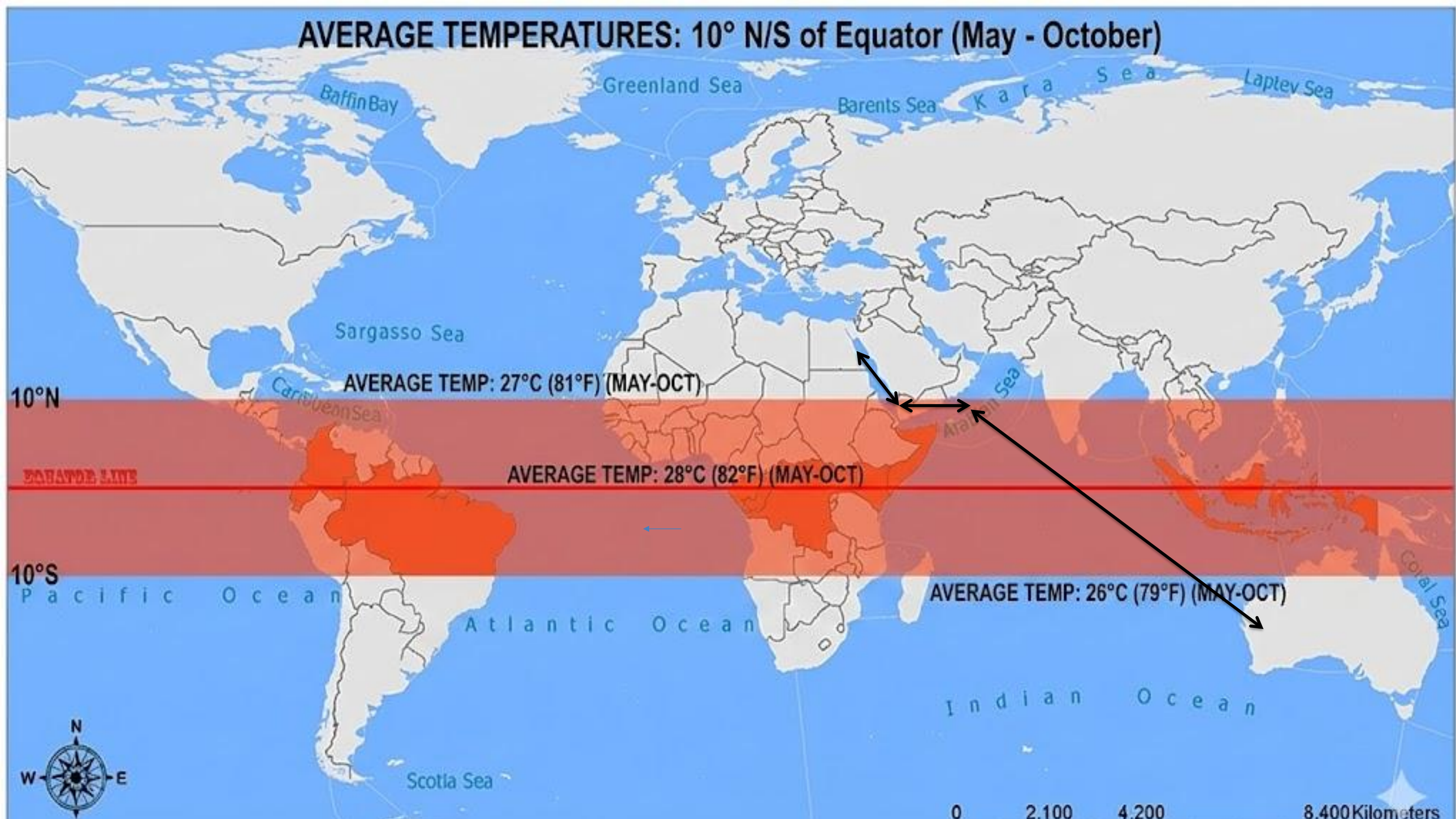
Importance of Sea Transport in Regional Trade

Middle East Imports: 4-6M sheep/year from Australia/Europe; routes vulnerable to heat, storms.

Challenges: Long voyages (2-4 weeks), cross-border handovers.

These routes are welfare-critical because duration + climate leave no margin for error.”


The World
Arctic Ocean
Greenland
Svalbard (Norway)
Arctic Ocean
Russia
Canada
Alaska (U.S.A.)
North Pacific Ocean
United States of America
Mexico
Hawaii (U.S.A.)
Kazakhstan
Mongolia
China
India
Iran
Saudi Arabia
Libya
Egypt
Tunisia
Niger
Chad
Sudan
Ethiopia
Somalia
Yemen
Japan
North Pacific Ocean
Taiwan
Philippines
Malaysia
Indonesia
Indian Ocean
Australia
Tasmania
New Zealand
South Pacific Ocean
South Atlantic Ocean
Southern Ocean
Antarctica
Distance between Fremantle Port and Aqaba Port = 6154 nautical miles
At a speed of 15 knots, it takes around 17 days
PalaceLearning.com


AVERAGE TEMPERATURES: 10° N/S of Equator (May - October)
Baffin Bay
Greenland Sea
Barents Sea
Kara Sea
Laptev Sea
Sargasso Sea
AVERAGE TEMP: 27°C (81°F) (MAY-OCT)
10°N
Caribbean Sea
EQUATOR LINE
AVERAGE TEMP: 28°C (82°F) (MAY-OCT)
10°S
Pacific Ocean
Atlantic Ocean
AVERAGE TEMP: 26°C (79°F) (MAY-OCT)
Coral Sea
Indian Ocean
Scotia Sea
N
W
E
0
2,100
4,200
8,400 Kilometers

World Organisation for Animal Health

WOAH Standards for the Whole Journey: A Framework for Animal Welfare in Long-Distance Transport

Chapter 7.2 Element	Summary of Recommendations
Animal Behaviour	Handlers must understand basic animal behaviour, including flight zone and point of balance, to design facilities and handle animals calmly, minimizing fear, stress, and injury during all stages of the journey.
Responsibilities	Animal welfare is a shared responsibility among all parties involved in the journey, including exporters, importers, transport operators, shipping companies, vessel masters, stockpersons, and Competent Authorities. Responsibilities must be clearly defined and exercised throughout the whole journey.
Competence	All persons responsible for animals during transport must be competent. Competence should be achieved through appropriate training, practical experience, or a combination of both, relevant to the species and transport mode.
Planning the Journey	The journey must be adequately planned in advance, considering route, duration, weather forecasts, sea conditions, contingency measures, emergency response procedures, and the specific physiological and behavioural needs of the animals.
Documentation	Required documentation includes journey plans, emergency and contingency plans, animal identification and traceability records, veterinary health and fitness certification, and any other documents required by Competent Authorities.
Pre-journey Period	Animals must be assessed for fitness to travel before the journey begins. Animals that are sick, injured, weak, newborn, or in the final 10% of pregnancy are considered unfit for transport and must not be loaded.
Loading	Loading must be a planned and supervised operation carried out by competent personnel using suitable facilities, equipment, and handling methods to prevent injury, stress, and fatigue.
Travel	During the journey, animals must be regularly observed to monitor health and welfare. Ventilation, watering, feeding, and waste management systems must be functional at all times, with prompt corrective action if deficiencies are detected.
Unloading and Post-journey	Unloading must be planned and supervised to ensure calm handling and the use of appropriate facilities. After unloading, the vessel should be cleaned and disinfected, and animals must have access to feed, water, and rest as required.
Refusal of Importation	If a shipment is refused entry, animal welfare becomes the overriding priority. Suitable isolation or holding facilities must be available, and animals must be provided with adequate feed, water, care, and veterinary attention until a welfare-appropriate solution is implemented.

World Organisation for Animal Health

Australian Government
Australian Maritime Safety Authority

Integration with Australian Standards (MO43/ASEL)

ASEL and MO43 are used as **operational tools** to implement WOAH outcomes under extreme conditions."

While WOAH provides our international framework, we've integrated **Australian Standards - specifically MO43 and ASEL** - into our operations. Why? Because they're the most stringent, proven standards for livestock transport in conditions similar to our Middle East routes.

MO43 mandates redundant systems - backup ventilation, emergency power - ensuring we never lose critical life support during voyage.

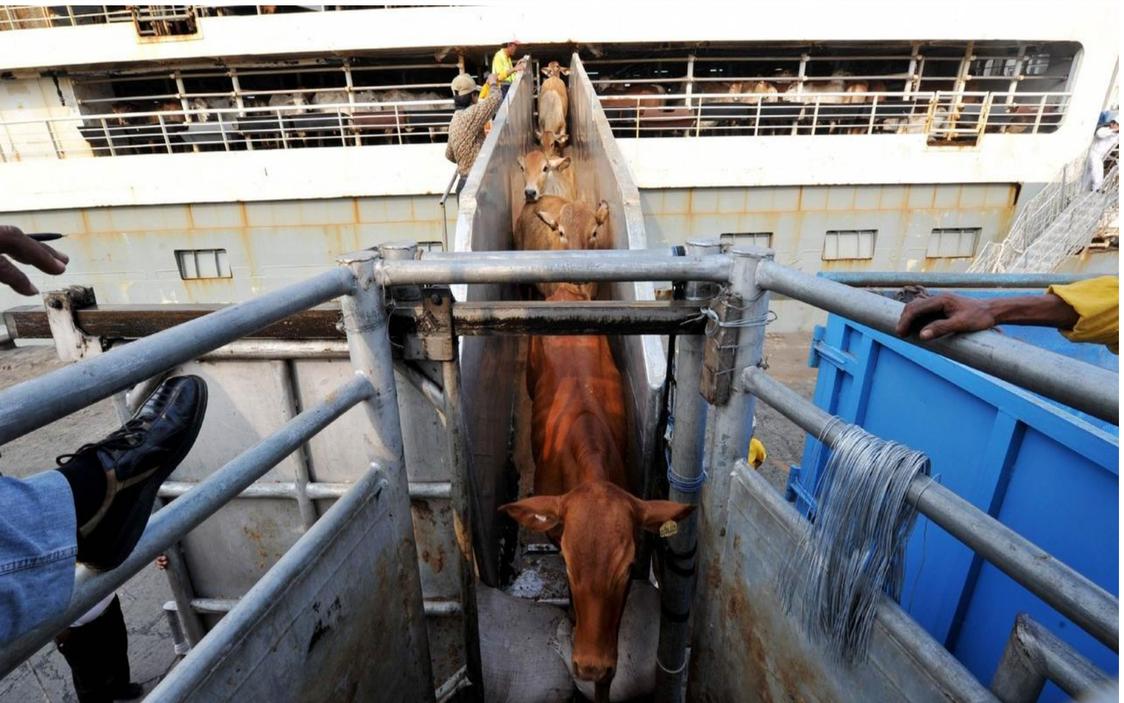
ASEL provides precise space allowances per animal and comprehensive heat stress risk assessments - crucial for Red Sea and Arabian Gulf conditions.

“Five Freedoms Translated into Shipboard Controls”

"Today's focus is straightforward: **ensuring animal welfare through structured protocols**. Not good intentions, not reactive problem-solving, but systematic, documented procedures that prevent welfare issues before they occur.

Five Freedoms framework,

1. **Freedom from Hunger and Thirst** - continuous access to fresh water and appropriate feed
2. **Freedom from Discomfort** - proper shelter, bedding, and environmental conditions
3. **Freedom from Pain, Injury, and Disease** - prevention, rapid diagnosis, and treatment
4. **Freedom from Fear and Distress** - handling and conditions that avoid mental suffering
5. **Freedom to Express Normal Behavior** - adequate space and appropriate social grouping



Introduction to Livestock Transport Challenges

Animal welfare in livestock transport does not fail because standards are missing.

It fails when planning is weak, responsibilities are blurred, or contingency thinking is absent.

This presentation focuses on what actually works—on the ground, at sea, and under pressure.

The Whole Journey as an Operational System (Not a Checklist)

FARM (Point of Origin)

Purpose:
Select animals that can complete the *entire* journey without avoidable suffering.

What must happen (Australia & Ireland – common ground)

Animals must be **fit for the whole journey**, not just fit to load

Animals must be:

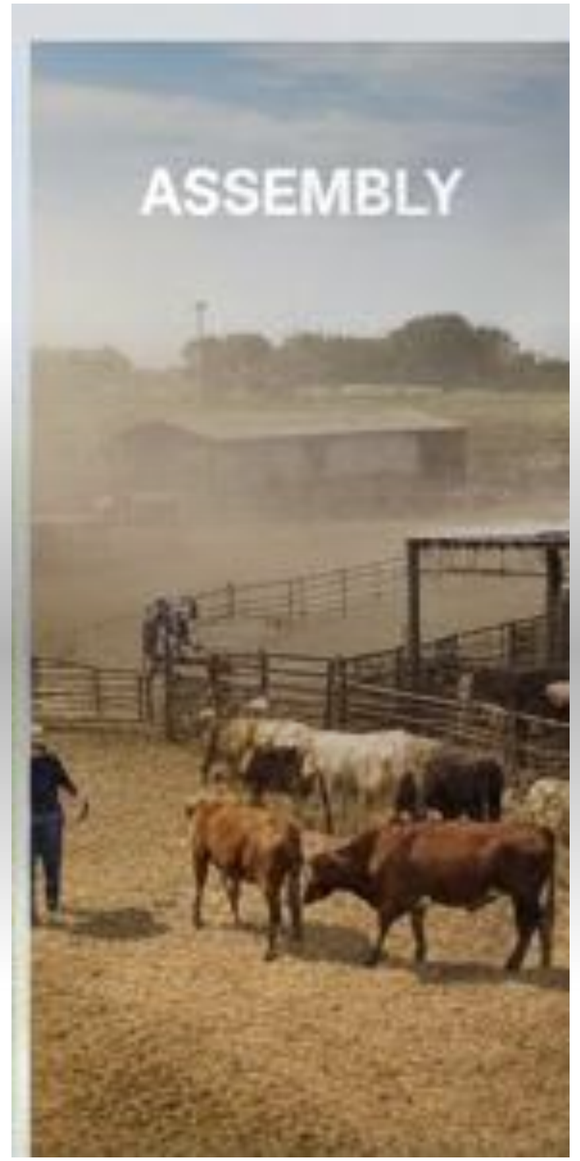
Free from injury, disease, lameness, blindness, advanced pregnancy

Able to stand, walk, eat, and drink normally

Handling must be calm and low-stress:

Australian emphasis

- **Strong exporter accountability from farm gate onward.**
- **Fitness assessed against voyage length and destination climate.**
- **Greater focus on heat tolerance and body condition score.**



ASSEMBLY (Saleyard / Assembly Depot)

Purpose:
Prepare animals safely for the next transport phase without welfare degradation.

What must happen

Animals rested after transport from farm.

Access to:

- Clean water immediately
- Feed if held beyond minimum hours

Mixing of animals minimized:

- Especially unfamiliar males or different weight groups

Continuous monitoring for:

- Injuries
- Stress
- Animals that deteriorated during transport

PRE-EXPORT (Quarantine / Approved Premises)

Purpose

Final verification that animals are healthy, fit, and adapted to the export conditions.

What must happen

- Veterinary inspection and certification.
- Animals observed over time, not just inspected once.
- Acclimatization:
  - Feed type similar to onboard ration
  - Water delivery systems similar to ship systems
- Removal of animals showing:
  - Lameness
  - Respiratory stress
  - Poor adaptation

Welfare Protocols: Pre-Loading Fitness Assessment

- Checks: Veterinary exams, reject unfit (e.g., pregnant >90%).
- Quarantine: 5-7 days pre-load.
- Outcome: Reduces en-route issues by 30%.

Biosecurity and Sanitization

Before arrival at the loading port, the vessel undergoes a rigorous cleaning regime to prevent disease transmission:

- **Deep Cleaning:** All livestock decks (sheep houses) are cleaned and disinfected using agents such as Soda Ash.
- **Bilge & Compartment Hygiene:** Hold bilges are disinfected, and all non-livestock compartments (e.g., peak stores, generator rooms, accommodation) must be free from any residual dung.
- **Pest Control:** Fumigation (e.g., Pestigas) is carried out in both cargo holds and fodder storage areas to eliminate insects and vermin.
- **Ventilation Hygiene:** All trunking, louvers, and impellers are cleared of loose animal hair, wool, and dung to maintain air quality.


The Main Deck for cattle loading
This is a -36year-old vessel ready for loading


Fodder Line
from silo
Fodder trough

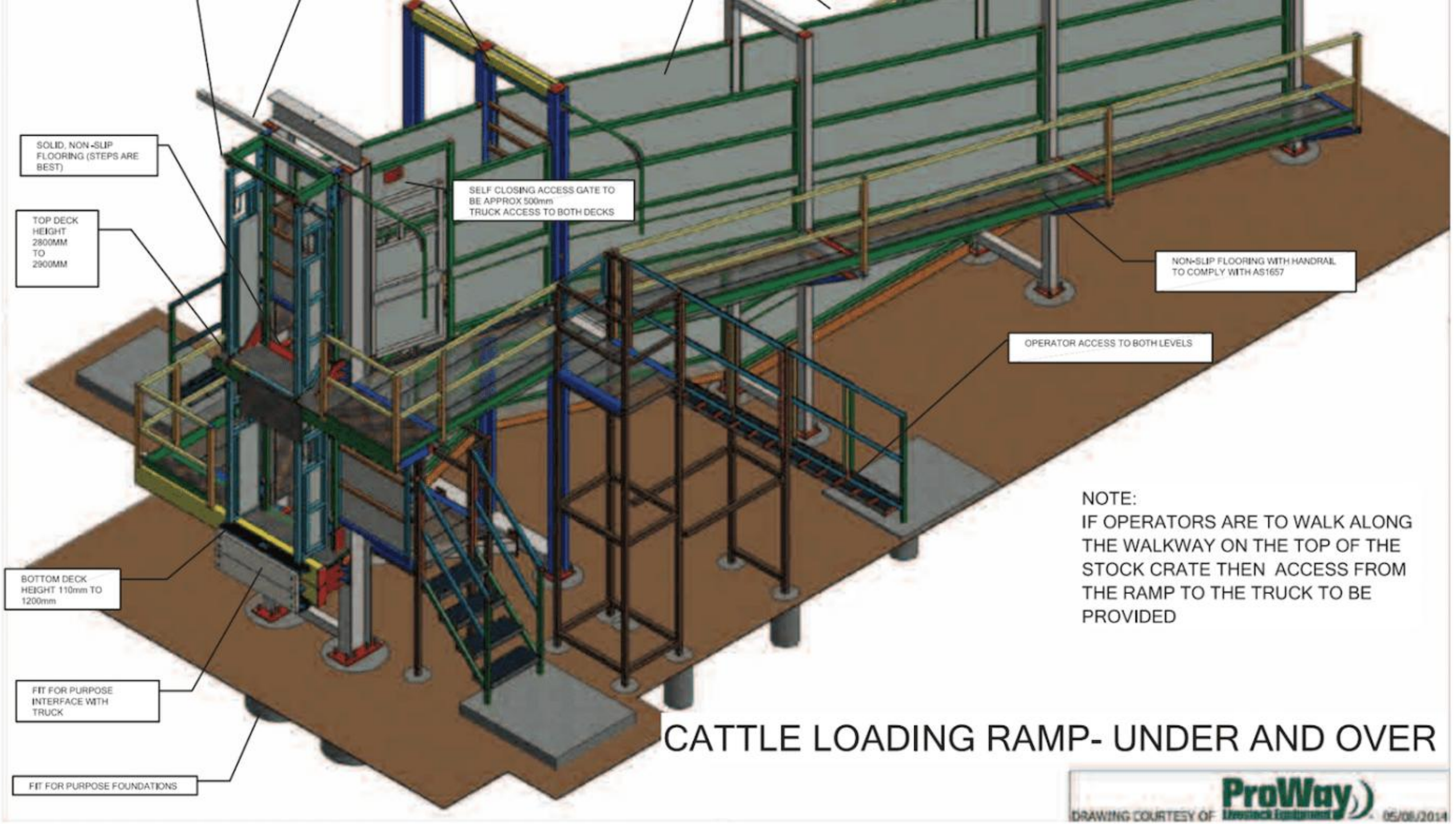

Fodder silo
Cargo Vent

PORT (Load-out Phase)

Purpose:
Move animals onto the vessel without stress, injury, or welfare decline.

What must happen

- Loading ramps:
  1. Non-slip
  2. Appropriate slope
  3. Side protections
- Loading density controlled:
  - Avoid overcrowding and piling
- No aggressive handling:
  - No hitting, tail twisting, or excessive force
- Loading pauses if animals show distress.



NOTE:
IF OPERATORS ARE TO WALK ALONG THE WALKWAY ON THE TOP OF THE STOCK CRATE THEN ACCESS FROM THE RAMP TO THE TRUCK TO BE PROVIDED

CATTLE LOADING RAMP- UNDER AND OVER

DRAWING COURTESY OF ProWay Livestock Equipment 05/08/2014

SEA PASSAGE

Purpose:
Maintain animal welfare continuously for the duration of the voyage.

Australian emphasis

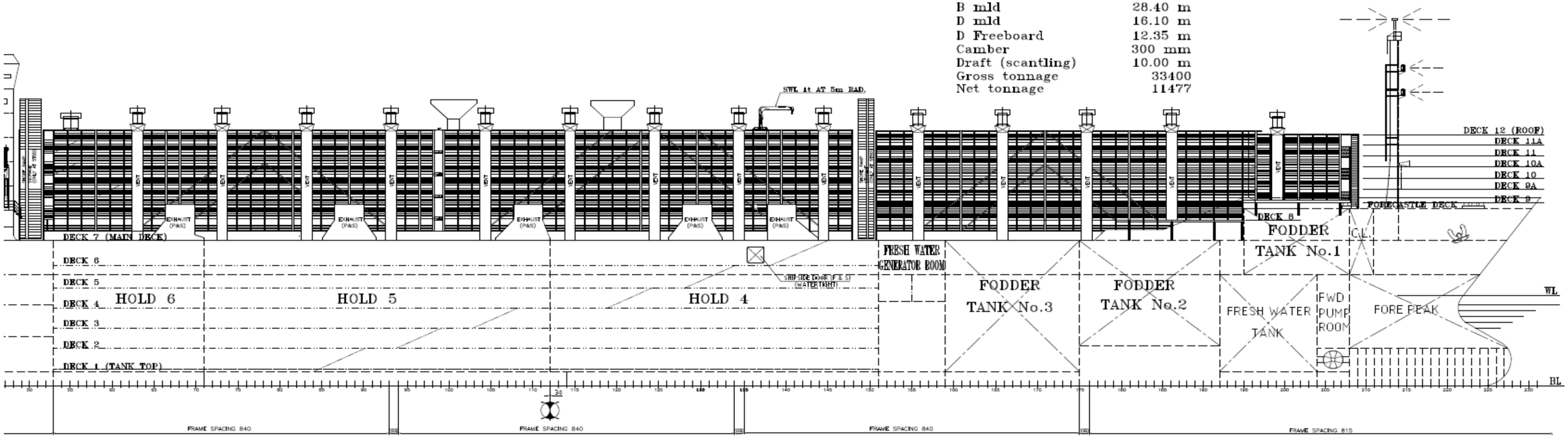
- Strong focus on:
  - Heat stress risk assessment
  - Wet Bulb Temperature management
- Mandatory reporting and voyage review.
- Clear welfare decision authority onboard.

What must happen

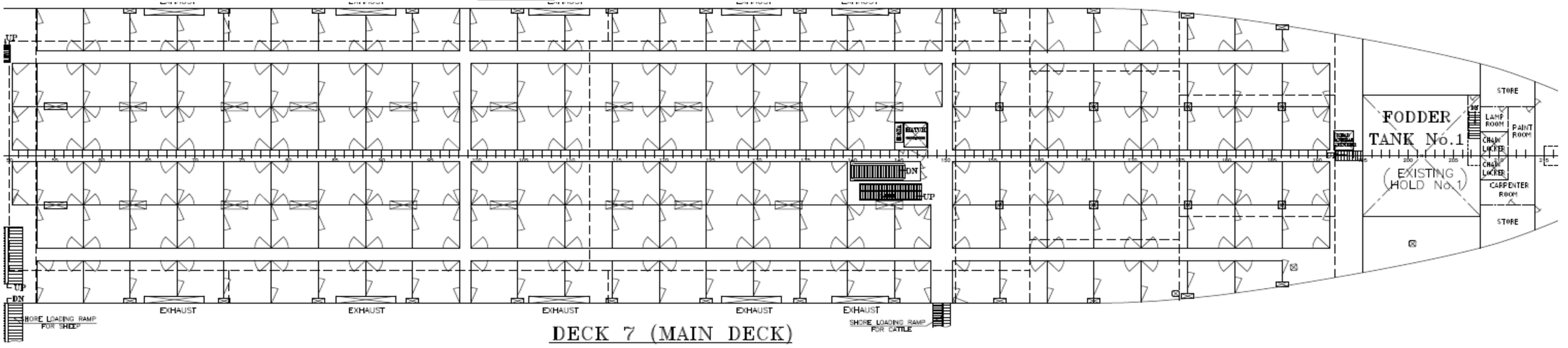
- Adequate ventilation at all times.
- Continuous access to:
  - Feed
  - Water
- Daily animal inspections:
  - By trained stockpersons
  - With records
- Immediate response to:
  - Heat stress
  - Injuries
  - Illness
- Mortality managed respectfully and hygienically.

PRINCIPAL DIMENSION

L.O.A.	196.00 m
L.B.P.	183.00 m
B Extreme	29.40 m
B mld	28.40 m
D mld	16.10 m
D Freeboard	12.35 m
Camber	300 mm
Draft (scantling)	10.00 m
Gross tonnage	33400
Net tonnage	11477



PROFILE



DECK 7 (MAIN DECK)

Heat stress risk assessment (HSRA)

On board HSRA is synthesized from the standards of the **World Organisation for Animal Health (WOAH)**, **Marine Order 43 (MO43)**, and the **Australian Government (ASEL 3.3)**. It is designed for long-haul voyages to the Middle East, where high humidity and temperature (high heat load) are the primary welfare risks.

- **Risk Assessment Framework (Pre-Voyage)**
- Before departure, the risk must be assessed based on the following variables:

Risk Factor	Assessment Criteria (Standard)
Animal Factors	Species (Sheep vs. Cattle), Breed (Bos taurus are higher risk than Bos indicus), weight, body condition, and coat length.
Vessel Factors	MO43 requires a minimum ventilation rate. HSRA models calculate if the ship's Pen Air Turnover (PAT) can dissipate the heat generated by the animals.
Route/Season	Voyages to the Middle East between May and October (Northern Summer) are considered "High Risk" and may be prohibited for certain species (e.g., sheep).
Stocking Density	ASEL 3.3 mandates "Heat Stress Space." This is extra floor space (often 10–30% more than the base rate) to allow air to circulate around each animal.

Critical Temperature Thresholds

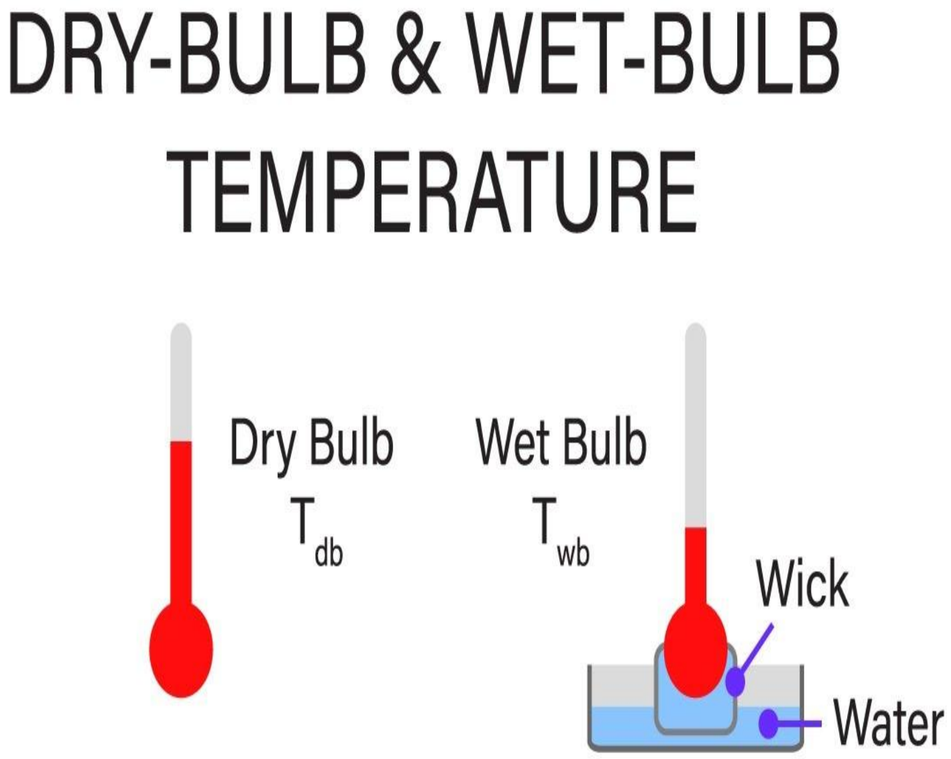
In maritime transport, **Wet Bulb Temperature (WBT)** is the primary metric because it accounts for humidity. When humidity is high, animals cannot lose heat through evaporation (panting).

When is Temperature "High"?
The **Heat Stress Threshold (HST)** is the WBT at which an animal's body temperature begins to rise because it can no longer shed heat.

- **Sheep (Merino/Standard): 28°C WBT.** Above this, sheep cannot maintain heat balance.

- **Cattle (*Bos taurus* - e.g., Angus/Hereford): 26°C – 28°C WBT.** These are highly sensitive to humidity.

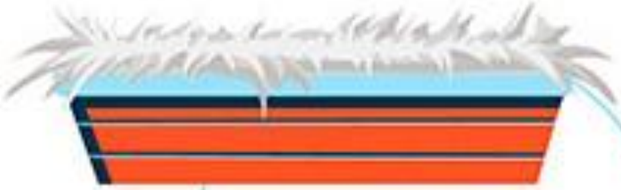
- **Cattle (*Bos indicus* - e.g., Brahman): 30°C – 32°C WBT.** These are more heat-tolerant but still at risk in the Persian Gulf summer.



HEAT STRESS EVALUATION

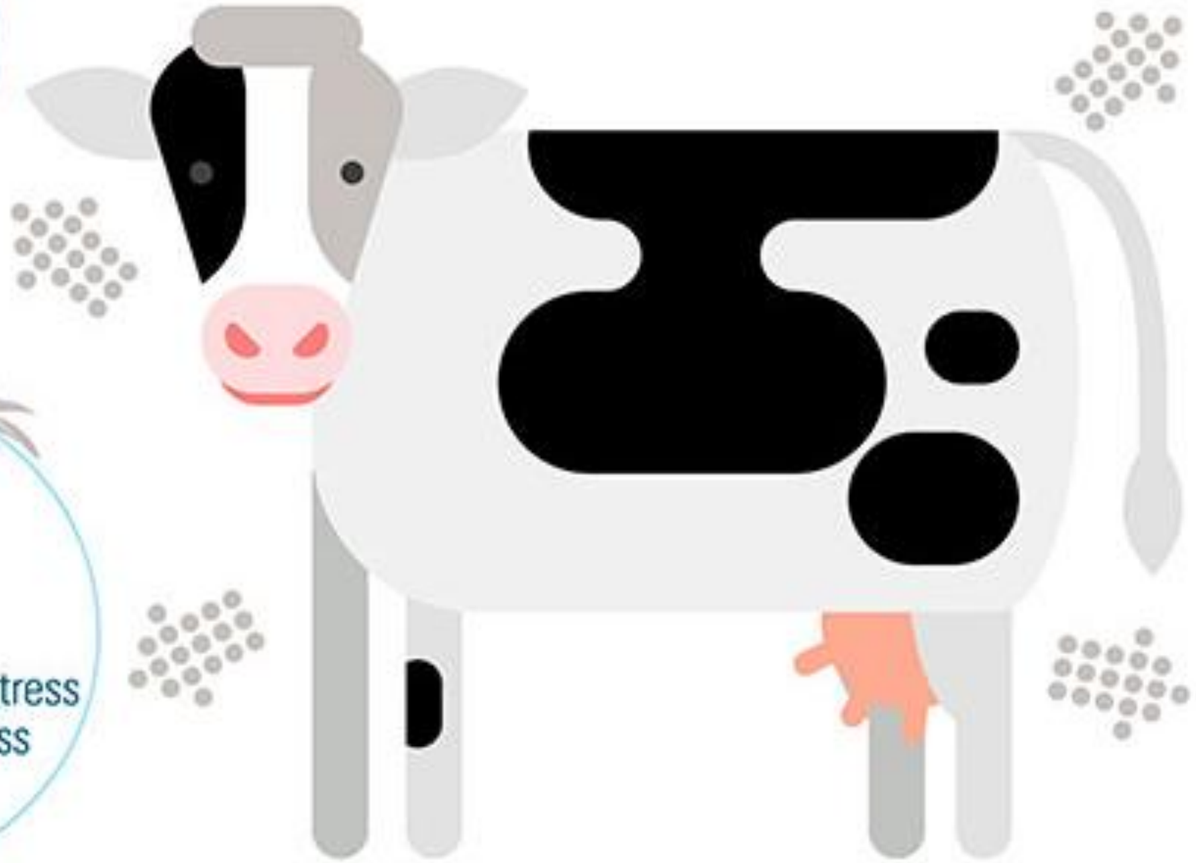
Bovine thermal comfort zone[3] = 5 to 25°C (41 to 77°F)

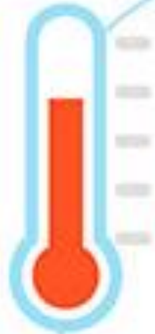
Respiratory frequency
>100/min



Decrease dry feed consumption:

- **-10%** = moderate stress
- **-25%** = severe stress





Body temperature
(rectal) > 39.4°C

Decreased milk production

The "Red Flags" (Clinical Indicators)

A "Red Flag" is a signal for immediate emergency intervention (e.g., increasing fan speed, changing course to find crosswinds, or "wash downs").

For Cattle: The Panting Score

Observers use a 0–4 scale. **Red Flags start at Score 3.**

- **Score 3:** Open mouth, tongue out slightly, laboured breathing, neck extended.
- **Score 4:** Open mouth, tongue fully extended, head down, gasping. **(Extreme Emergency/Likely Fatality).**

For Sheep: Behavioral Cues

Sheep are "stoic" and hide signs of stress until they are severe.

- **Red Flag 1: Open-mouth breathing.** Unlike cattle, sheep should rarely breathe with an open mouth. If seen, they have reached their limit.
- **Red Flag 2: Lack of "Diurnal Relief."** If WBT does not drop at night, animals cannot shed the heat they built up during the day. This **cumulative heat load** is the #1 killer on long voyages.
- **Red Flag 3: Congregation.** Sheep huddling away from the center of the pen toward the "fresh air" inlets or vents.

Environmental Red Flags

- **WBT > 29°C** for more than 48 hours without relief.
- **Hazy "Ammmonia Fog":** High humidity combined with urine/feces creates a toxic microclimate that irritates lungs and worsens heat stress.

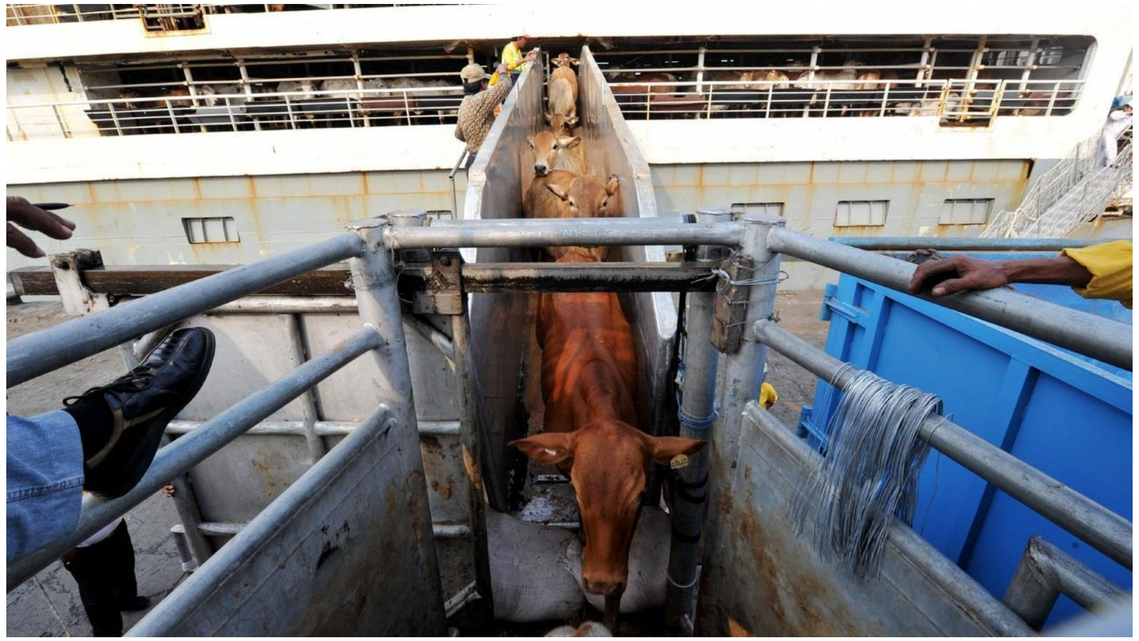
Mitigation & Next Steps

If these red flags appear, the Master and Stockperson must:

1. **Maximize Ventilation:** Ensure all MO43-compliant fans are at 100% capacity.
2. **Course Alteration:** Change the ship's heading to increase the "apparent wind" across the decks (beam winds).
3. **Hydration:** Supplement water with electrolytes and increase "trough cleaning" to encourage drinking.
4. **Feeding Changes:** Reduce pellet intake (metabolic heat from digestion increases body temperature).

DISCHARGE (Arrival Port)

Purpose:
Remove animals from the vessel safely and restore normal conditions quickly.



What must happen

- Discharge without delay.
- Proper ramps and handling.
- Immediate access to:
  - Water
  - Feed
- Monitoring for:
  - Injuries
  - Fatigue
  - Heat stress
- Veterinary support available.

Australian emphasis
- Exporter retains responsibility until animals are discharged safely.
- Reporting of post-arrival outcomes increasingly expected.

POST-ARRIVAL (Destination Country)

Purpose:
Ensure welfare recovery and safe transition to local systems.

What must happen

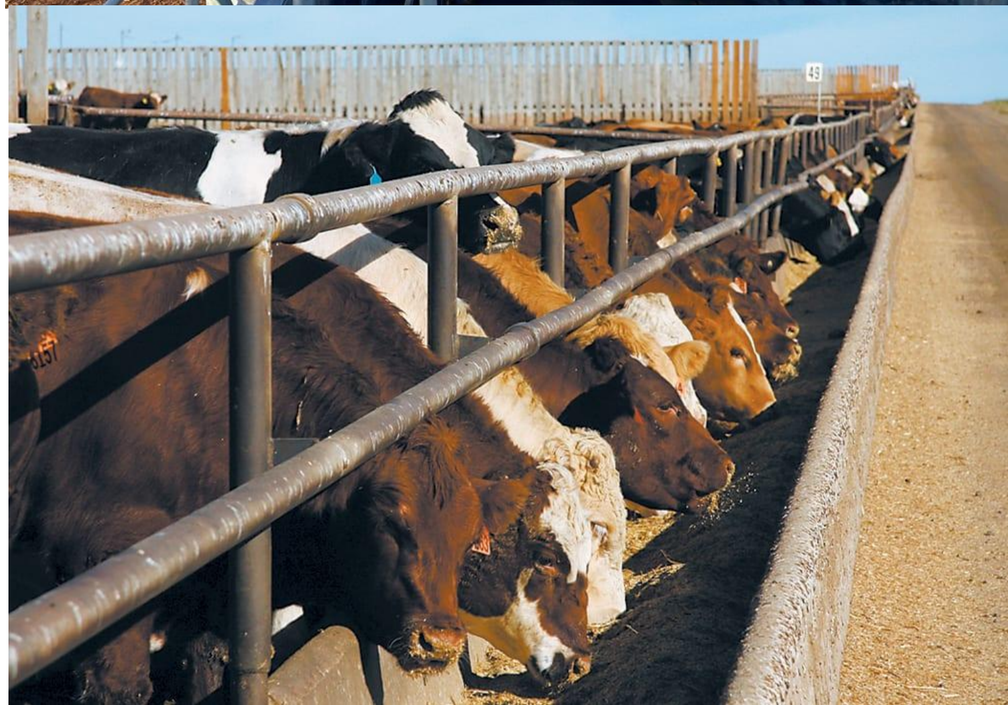
- Animals rested before onward transport.
- Veterinary inspection if trequired.
- Adequate feed and water.
- Humane handling consistent wih international standards.

Australian emphasis

•Increasing scrutiny of **supply chain assurance**.

•Focus on traceability and welfare outcomes beyond discharge.

Closing Reality Statement (WOAH-appropriate)
Australian and Irish systems differ in geography and journey length, but they agree on one truth: welfare failures are rarely sudden—they are usually planned weeks in advance by weak decisions.



Thank you

Any questions