

# Cold Climate Destination Checklist Cattle: Explanatory Document

## Introduction:

This document provides the supporting information for the Cold Climate Destination Checklist Cattle.

The Cold Climate Destination Checklist aims to address the unique risks & challenges to the health & welfare of cattle associated with their delivery into conditions that are below their thermoneutral zone.

It is relevant to cattle sourced in the southern hemisphere summer period (late spring to early autumn) that are delivered into the northern hemisphere winter period (late autumn to early spring) to locations likely to experience cold climatic conditions.

There can be significant thermal (cold) challenge and the risk of significant cold stress and hypothermia to such non-acclimated cattle arriving into cold climatic conditions. These cattle will not have winter coats and many may have a depleted layer of sub-cutaneous fat. There is an adaptive response or acclimation process with changes in behaviour, in metabolic rate and in dry matter intake that takes several weeks to occur. This means that the first 4 to 6 weeks post arrival is critical.

Appropriate management can mitigate cold climate challenges to the health & welfare of cattle.

The 3 most important management factors are:

1. To rapidly adapt the livestock to a safe, high energy ration.
2. To provide appropriate protection from wind chill.
3. To provide appropriate dry bedding to insulate livestock from cold ground.

The Beef Breeder Manual for Cold Winter Climates (MLA 2015) and Cold Winter Climates Tech Notes provides detailed information on all aspects of management of cattle in cold winter climates.

This checklist assumes that standard risk management procedures for delivery in to normal climatic conditions at destination have been addressed.

There is an "Arrival Checklist" on page 18 of the Beef Breeder Manual for Cold Winter Climates.

## Definitions:

- **Effective temperature:** Cattle experience the "effective temperature" which takes into account both air temperature and the effect of wind chill (i.e. the cooling power of the environment). There are tables available of "effective temperatures" for varying air temperatures and wind speeds. As an example, a wind speed of 20kph with an air temperature of **-4°C** results in the effective temperature being 8 degrees lower at **-12°C**.
- **Thermoneutral zone:** This is the temperature range (effective temperature) where livestock don't have to expend energy to maintain their normal body temperature.
- **Lower critical temperature (LCT):** This is the effective temperature at the lower (or bottom) limit of the thermoneutral zone. When the effective temperature decreases below the **LCT** then heat production from normal tissue metabolism and rumen fermentation is inadequate to maintain body temperature.

Animal metabolism (& behaviour) must change to provide adequate heat to maintain body temperature thereby increasing energy requirements for maintenance.

Any shortfall in energy intake results in significant cold stress (body condition & weight loss, decreased immune function, impaired reproduction etc) and potentially hypothermia.

The major factor affecting the **LCT** for cattle is their coat.

Adapted cattle with a heavy winter coat have a much lower **LCT** than non-adapted cattle with a slick summer coat (**-8°C** v **+15°C** respectively).

Clearly, cattle exported from an Australian summer to a northern winter will not have the insulation of a heavy winter coat.

The **LCT** is also affected by wet & muddy coats and by the insulation provided by sub cutaneous fat which is obviously depleted with lower body condition.

#### **Additional energy requirements for cold climates:**

The rule of thumb for cattle is that there is a 1.8 to 2% increase in energy requirement for every 1°C drop in effective temperature below their **LCT**.

Cattle with summer coats have an **LCT** of 15°C.

If these cattle are exported to climatic conditions with an effective temperature of -4°C then they are exposed to a drop of 19°C below their **LCT**.

They will have at least a **34%** (19 x 1.8%) increase in their energy requirement to maintain their body temperature.

If the air temperature is -4°C with a 20kph wind, then the effective temperature is -12°C due to wind chill.

Cattle with summer coats in this situation are exposed to a drop of 27°C below their **LCT**.

They will have a massive **49%** (27 x 1.8%) increase in their energy requirement to maintain their body temperature.

The bottom line is that cold climatic conditions dramatically increase energy requirements.

This explains the crucial importance of feeding management and the provision of wind chill protection & insulating bedding in maintaining the health & welfare of cattle exported to cold climatic conditions.

#### **The following section explains the points in the actual check list:**

##### **Consignment details:**

The Consignment details are mostly self-explanatory.

**Export Company:** Self-explanatory.

**Date:** Date of completing checklist.

**Consignment ID:** As per company reference.

**Description of Cattle:** Self-explanatory.

**Destination:** Self-explanatory.

**ETA at Destination:** Planned estimated date of arrival at destination.

**Expected Conditions:** A brief description of the expected range in climatic conditions.

**Facility Description:** Housed - type of housing. Not housed - description of the outdoor arrangement.

**Contact:** Name & contact details of person completing the checklist.

**Signed:** Self-explanatory.

##### **Confirmed Exporter:**

- A tick in this box means that a suitably qualified representative of the exporter has visited the destination/site and has confirmed that management has addressed this point.

##### **Confirmed Importer:**

- A tick in this box means that a suitably qualified representative of the importer has visited the destination/site and has confirmed that management has addressed this point.

## Check list headings:

### 1. Water

As with all climatic conditions provision of adequate potable water is essential. Livestock need to rapidly rehydrate after transport. Any limitation of water intake will directly limit feed intake.

Refer to the [Beef Breeder Manual for Cold Winter Climates](#) and [Cold Winter Climate Tech Notes](#) for information on water requirements.

- **Cattle will be offered access to water as soon as practical upon arrival:** Very cold climatic conditions may make it difficult to provide cattle with access to water immediately once unloaded. However, every effort should be made to allow stock to rehydrate as soon as possible after transport.
- **The water supply system and drinkers are able to function in freezing conditions:** With sub zero temperatures there is an obvious requirement to have a water supply & delivery system that functions in these conditions.
- **The watering points are suitably accessible to cattle:** Cattle may be unfamiliar with “frost free” waterers. Allowing “open” access may be required initially until the cattle have been “trained” to the waters.

### 2. Nutrition & Feeding

The nutritional management of cattle in cold climates is vitally important. The increased energy requirement must be met by adapting the cattle to an appropriate & safe, high energy ration as soon as possible.

It is common for local management to under estimate the energy requirement of non-acclimated cattle with a much higher LCT than local adapted cattle.

It is also common for local management to under estimate the comparative high dry matter intake of these Australian cattle once they begin to adapt to the local feed stuffs and begin to increase their metabolic rate in response to the cold climate. This increase in dry matter intake can be around 30%.

- **Cattle will be offered access to a good quality palatable ration as soon as practical upon arrival:** It is obviously important that cattle be offered access to a good quality, palatable ration as soon as practical upon arrival. It is generally recommended that cattle be offered palatable, high quality hay after being off-feed during transport. Palatable, high quality hay is often not available. Given that the key in cold climates is to rapidly adapt cattle to an appropriate & safe, high energy ration as soon as possible then there is every reason to immediately expose these cattle to a starter ration rather than poor to average quality hay.
- **There are contingency plans and alternative feeding equipment available in the event of breakdowns or other delivery problems:** Interruptions and delays to feed delivery can result in limiting the feed intake of cattle with the associated severe cold stress and hypothermia risk. Feeding systems should have backup systems or contingency/alternative plans in the case of breakdowns or other delivery problems.
- **There is a plan in place to increase the energy density of the ration to account for the metabolic demands of conditions that are below the thermoneutral zone:** There needs to be the understanding and the capability at the facility to safely & rapidly increase the energy density of the ration to account for the metabolic demands of conditions that are below the thermoneutral zone of the cattle. Appropriate feeds need to be available in sufficient quantity.
- **There is a plan in place to account for increased dry matter intake associated with adaptation to conditions that are below the thermoneutral zone:** There needs to be the understanding and the capability at the facility to account for and deliver the increased dry matter intake associated with adaptation to conditions that are below the thermoneutral zone of the cattle. Cattle will require access to feed at all times.

- **There has been a complete assessment of the nutrition program:** The nutrition program is critical for the long term and especially critical for the first 4 to 6 weeks. A complete assessment of the nutrition program should include but not be limited to the following:
  - There is ample quantity of appropriate feed stored for at least the autumn, winter & early spring feeding period (i.e. a feed budget).
  - There is or will be ample provision of appropriate new season feed (includes grazing).
  - The feed available is palatable.
  - The quality of available feeds is known, is predictable or has been analysed.
  - There are feeds available with sufficient quality (high energy density) to meet the higher energy demands of non-acclimated cattle.
  - The proposed ration/rations are safe, balanced and appropriate for non-acclimated cattle.
  - There is appropriate infrastructure to mix & deliver rations.
  - There are back up and/or alternative feeding systems in the event of breakdowns etc.
  - There will be minimal chance of sifting & sorting of ration ingredients.
  - There will be checks & balances in place to mitigate errors in mixing & delivery.
  - The cattle will have adequate access to the ration (feed trough/bunk space).
  - There will be appropriate feed trough/bunk hygiene.
  - There will be appropriate ration adjustment (adaptation periods, adjustments with varying dry matter of wet feeds, intake adjustments etc).
  - There will be monitoring of feeding management (cattle behaviour, manure scoring, cattle performance, usage of feed supplies, etc).

### 3. Facilities

- **The facility has appropriate shelter to mitigate wind chill:**  
**For housed cattle; the stocking density must be appropriate and the ventilation & effluent systems suitable. For cattle that are not housed; there must be provision of appropriate wind breaks.** Mitigation of wind chill is essential in cold climates. The impact is evident in the additional energy requirements when wind chill drops the effective temperature. Refer to Beef Breeder Manual for Cold Winter Climates (p43-58) for information on appropriate stocking density, shed ventilation, feed-trough space and wind break design & capacity.
- **The facility has an adequate supply of bedding material and appropriate means of delivery (including back-up systems):** Provision of dry bedding is essential to provide insulation from cold ground and allow cattle to rest. This is particularly important for livestock that are not housed.  
 Not only is the initial bedding important but there will be an ongoing requirement to frequently refresh this bedding especially in the first few weeks whilst the cattle are acclimatising. The amount required for ongoing refreshment will vary depending on housing or confinement set up, on topography & surface moisture, on weather conditions and on the number of cattle. Ongoing bedding requirements can be significant. A requirement of 1kg per head per day is often quoted. In non-housed cattle during the first few weeks of acclimation this amount should be more than doubled.  
 Adequate machinery for distribution is required including provision for back up in the event of breakdowns.
- **The facility has the ability to closely monitor cattle on a daily basis and easily transfer any cattle requiring attention to a dedicated hospital pen with appropriate cattle handling systems:** Ailments can lower feed intake. In cold climatic conditions, any animal with a marginal decrease in appetite may be at risk of not meeting its energy requirement for maintaining body temperature.

A minor ailment can quickly develop the complication of severe cold stress & hypothermia. Regular (daily) close monitoring of livestock is essential with systems & staff available to easily transfer any animal requiring attention to a dedicated hospital facility. The hospital facility requires appropriate livestock handling and restraining systems. The facility requires availability of appropriate medications & treatments and appropriate expertise.

#### 4. Hazards & Handling

- **Cattle transport – there is a plan for cold exposure mitigation:** If transporting cattle during cold conditions is unavoidable then trucks must use ample bedding, have ventilation adjusted and be loaded with appropriate stocking density. Refer to the Beef Breeder Manual for Cold Winter Climates for information on transporting cattle and transport during extreme weather (p91-98).
- **Cattle handling (including loading/unloading/yarding):**
  - **The facility has plans in place to deal with slippery conditions as a result of frozen surfaces:** Freezing of the ground where pooling has occurred results in very slippery conditions. This is clearly very hazardous in any areas that cattle are required to navigate. The spreading of salt and or sand will mitigate this hazard. Patient & calm cattle handling is also required.
  - **The facility has plans in place to deal with uneven (rutted) surfaces in cattle handling areas that arise due to frozen conditions:** Freezing of uneven and rutted ground that cattle will be required to navigate is also very hazardous. Such areas in cattle handling facilities will benefit from spreading sand, woodchips, and or straw. Patient & calm cattle handling is also required

**New importer or new facility:**

Yes

No

**Independent audit of nutrition program:**

Yes

No

N/A

A new importer means that the importer is a new client to the exporter.

A new facility means that the facility has not received cattle previously from the exporter.

Given the importance and the complexity around nutrition and feeding management, if this is a new importer or a new facility and there is likely to be significant cold thermal challenge, then a complete independent audit of the nutrition program is indicated.

The independent audit should address but not be limited to the points listed above under “complete assessment of the nutrition program”.

If an independent audit of the nutrition program has been completed then the relevant details should be attached to the checklist.