Stakeholder analysis:

* Sheep owners in the rural town of Rosedale, Mathatha
* Shepherds
* Individual product/community product

The ways to graze sheep:

<https://www.youtube.com/watch?v=xR5udiMms3o> (not in Africa but shows how to graze sheep)

<https://www.youtube.com/watch?v=3eGVTkrnYVc> (we might have to guess their grazing method, btw do they have large grassland?)

<https://www.youtube.com/watch?v=CRMmVx4aKSA> (do they also graze different species together?)

Stakeholder pains:

* Cost effective, might want to increase reusability, reduce cost in technology
* Accurateness of the location
* Ease of use
* Better communication with shepherds

Framing/rescoping (Arielle)

Cost efficient, easy to use solution to track (do we want to know the activity history as well?) the exact location of the sheep once lost in two situations: when sheep wander off by themselves within 1-2km from the homestead or when they got mixed up with sheep from others(5km). The purpose of this product is to help the farmers find their lost sheep without needing to go out search the vicinities and the other homesteads.

* But not necessarily trackers, could be other solutions
* The requirement is to know the exact location of each sheep once lost within the radius of 5km
* Why so specific of tracking? (Potential risk if not going with this choice)
* Differentiating method
* Preventing sheep from wandering
* Finding/monitoring the lone sheep

Want the exact location/activity history?

Geography:

Communal grazing field near water dam

Mthatha:

formerly Umtata, is the main city of the **King Sabata Dalindyebo Local Municipality** in Eastern Cape province of South Africa and the capital of OR Tambo District Municipality.

Table

Description automatically generated

Mthatha falls under OR Tambo District Municipality which is the poorest district in the Eastern Cape in terms of all poverty measures. It has the lowest HDI (0.45) and the highest poverty gap (2 231 million) in the Eastern Cape. The number of people living in poverty is also high in this district (64.6%), unemployment is at 65.5% and the literacy rate 42.2%.[[10]](https://en.wikipedia.org/wiki/Mthatha#cite_note-OLF-10)

According to SA Delivery, The average annual income of a black Mthatha resident is R15,762.[[12]](https://en.wikipedia.org/wiki/Mthatha#cite_note-SADELIVERY-12) The town has also been plagued by complaints around its roads.

<http://www.mthatha.co.za/umtata.html>

Tracker:

**Electronic ID**  
The number of animals being identified with radio frequency identification (RFID) technology is rapidly growing and may soon be required. Electronic ear tags are the most common form of electronic ID. A microchip and coiled copper antenna is encapsulated in a standard plastic ear tag. A rumen bolus is administered using a balling gun and resides in the reticulum of the animal. It is easily removed by the packer and can be recycled.  
  
Microchips are a form of identification that involves the implanting of an electronic chip with a miniature radio transponder and antenna, under the skin of an animal. The most common implant site is between the shoulder blades or near the base of the ear. The transponder can also come in a form that can be ingested by the animal.

Problem is that they said collar and bells do not work, due to number of the sheep? Reusability?

* **Ear tagging**  
  Ear tags should be placed between the middle and lower cartilage ribs in the ear and far enough out on the ear to allow for later wool growth. In addition to identifying an individual animal, ear tags can contain other useful information about the animal. The first number on an ear tag can be used to denote the animal's birth year.  
    
  Different colored tags can be used for different birth years, breed types, sires, or owners. The name or registration prefix of the producer or farm can be written or imprinted on the tag. Ear tags can be inserted in different ears (right or left) to denote birth type, sex of the lamb, breed type, or sire.
  + - Research: Design for Durability: Functionally, the solution should last long (maintenance should be easy etc.) (Arielle)