



Bertie Troy / Grasstec Group





- Established in 1996
- Work in Ireland & the UK

**31
Staff**

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**Ireland's
Dairy
industry**



Ireland's Dairy industry

- 1.4 million dairy cows
- 18,000 dairy farmers
- Average herd size = 80 cows
- Ave per cow production = 5,000 litres
- Total national production = 7 billion litres
- 90% Spring calving



Key components of grazing infrastructure



1. Paddock System



2. Roadway System



3. Water System

Water
System

Roadway
System

Paddock
System

Paddock System

Why have a Paddock System?

Ensure control of animals

Protect regrowths



Paddock System



Roadway System

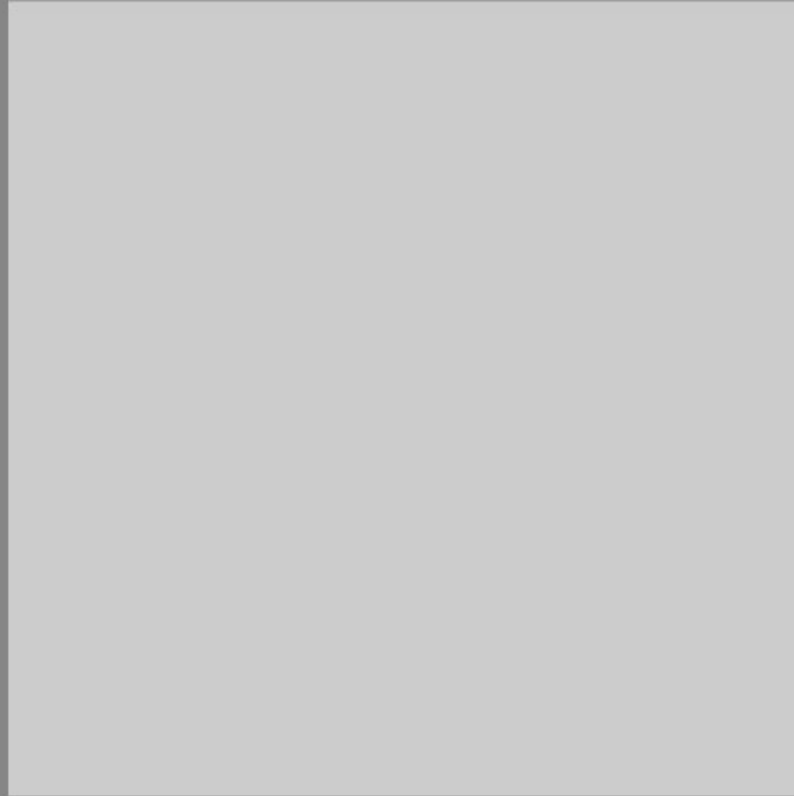
Why is this necessary?



Avoid This



Walking speed of a cow?



Energy Required for Cows Walking One Kilometer

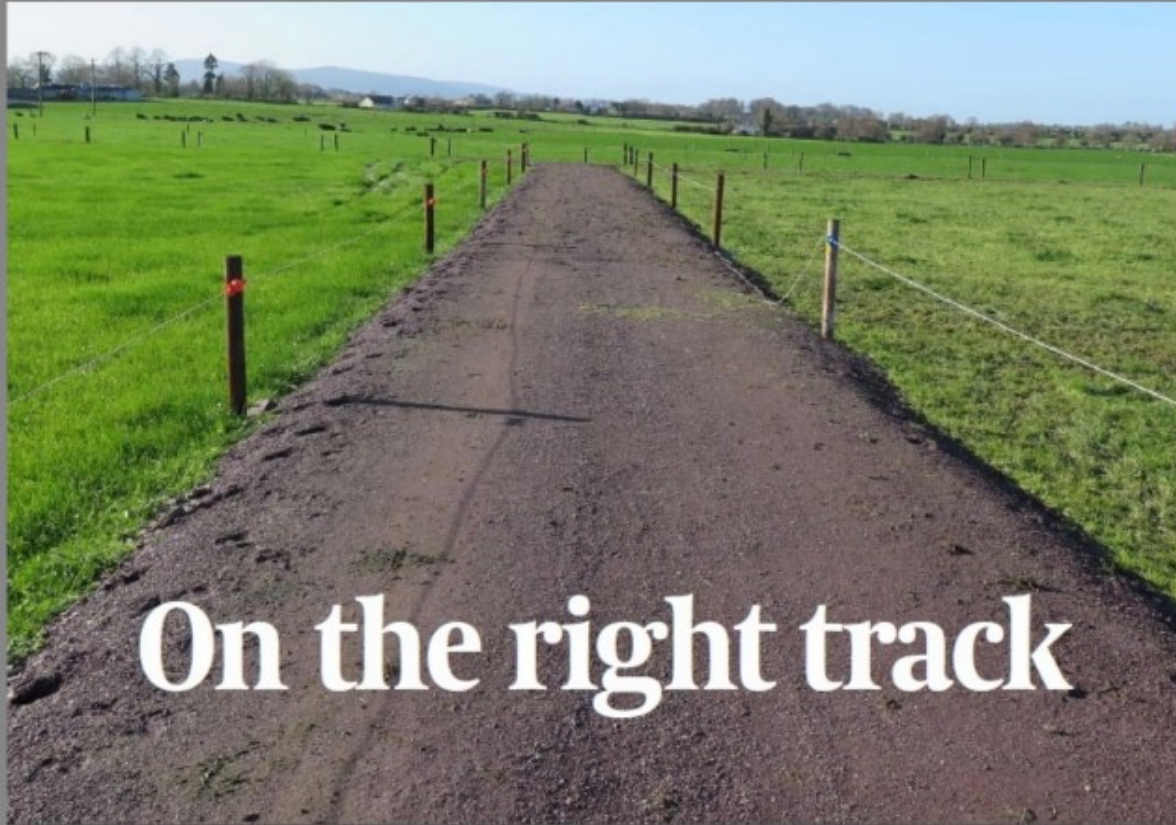
Cows walking on	Energy Used	Equivalent to energy required to produce
Flat Terrain	1MJ	0.20 litre of milk
Steep Terrain	5MJ	1 litre of milk

How Roads are Constructed

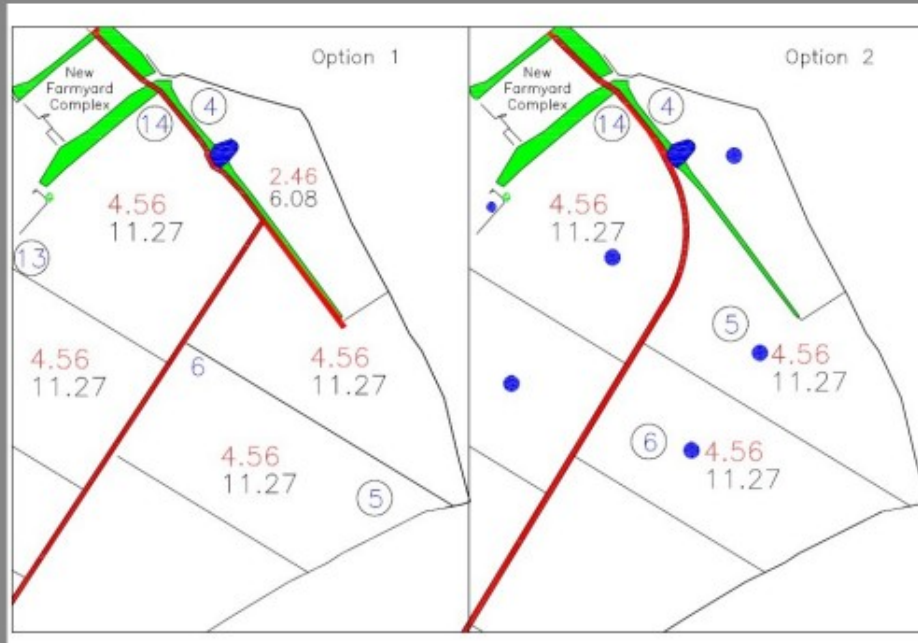
Main Method



Ideal Look & Finish



Hard turns Vs sweeping bends



Curved road



Widths of Roadways

Recommended Roadway Dimensions for Milking Herds

Cow Numbers	Width - Meters
<120	4.0
120 - 250	5.0
250 - 350	6.0
350 - 450	6.5

Water System



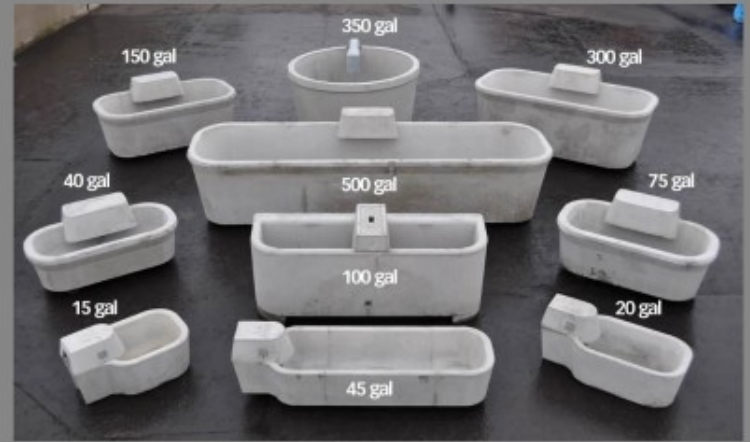
Key Aspects of a Water System



Water Pump



Water Pipe



Trough

Old Valve



V

Fast Flow Valve



Key Design Requirements

Peak Demand?

- 90 minutes after milking
- 150 cows require 75 litres per minute



How are Pipes Laid?



Sample Farm

- 86 hectares
- Beef farm converting to dairy
- Stocking rate of 3.5 cows per hectare



Positioning
Straining
Posts

Factors to
Consider

Factors to
Consider

Factors to Consider

Net area to walk cows to:



Factors to Consider

Ability of farm to grow grass

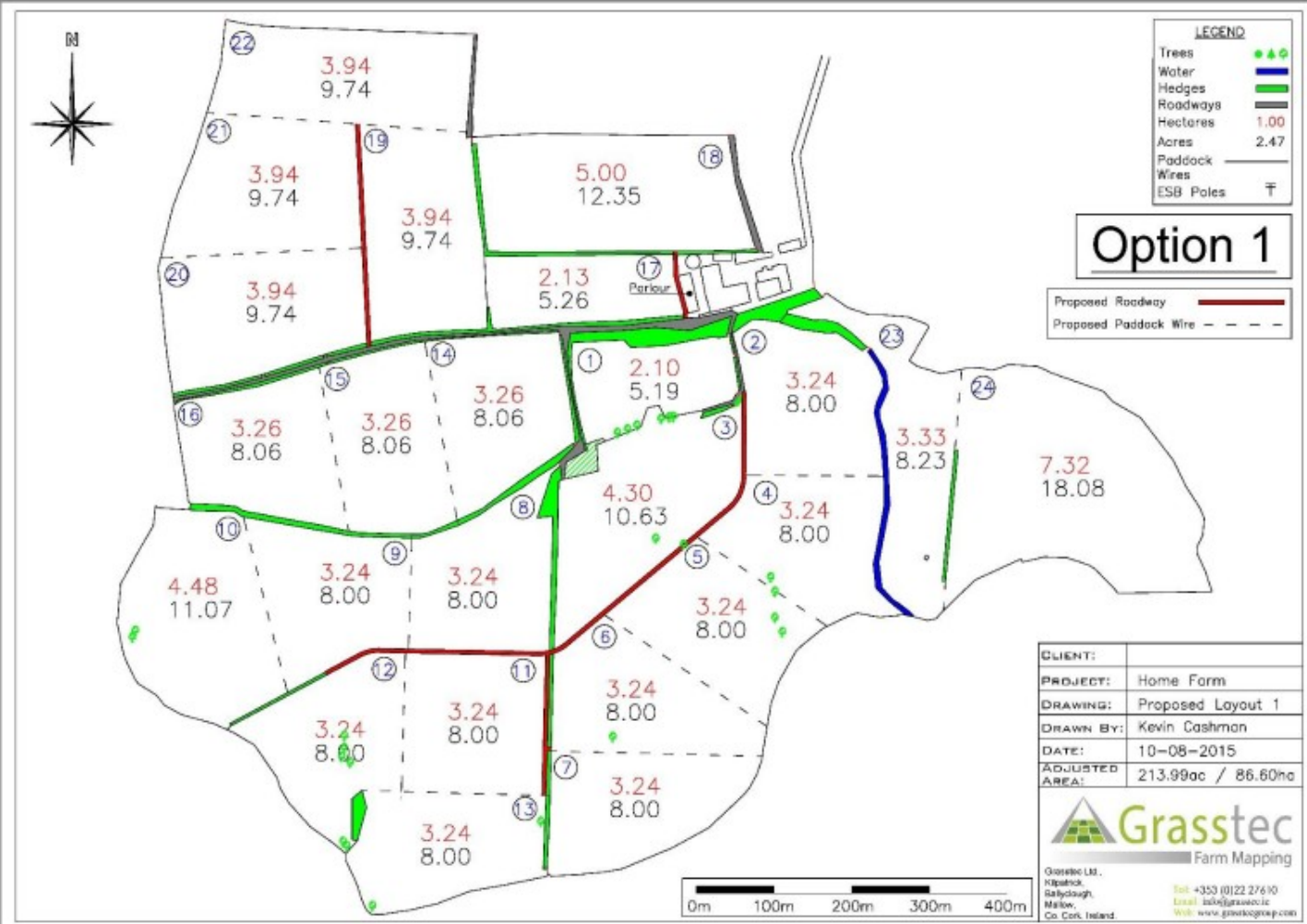
A preference of 24 hour or 36 hour paddocks

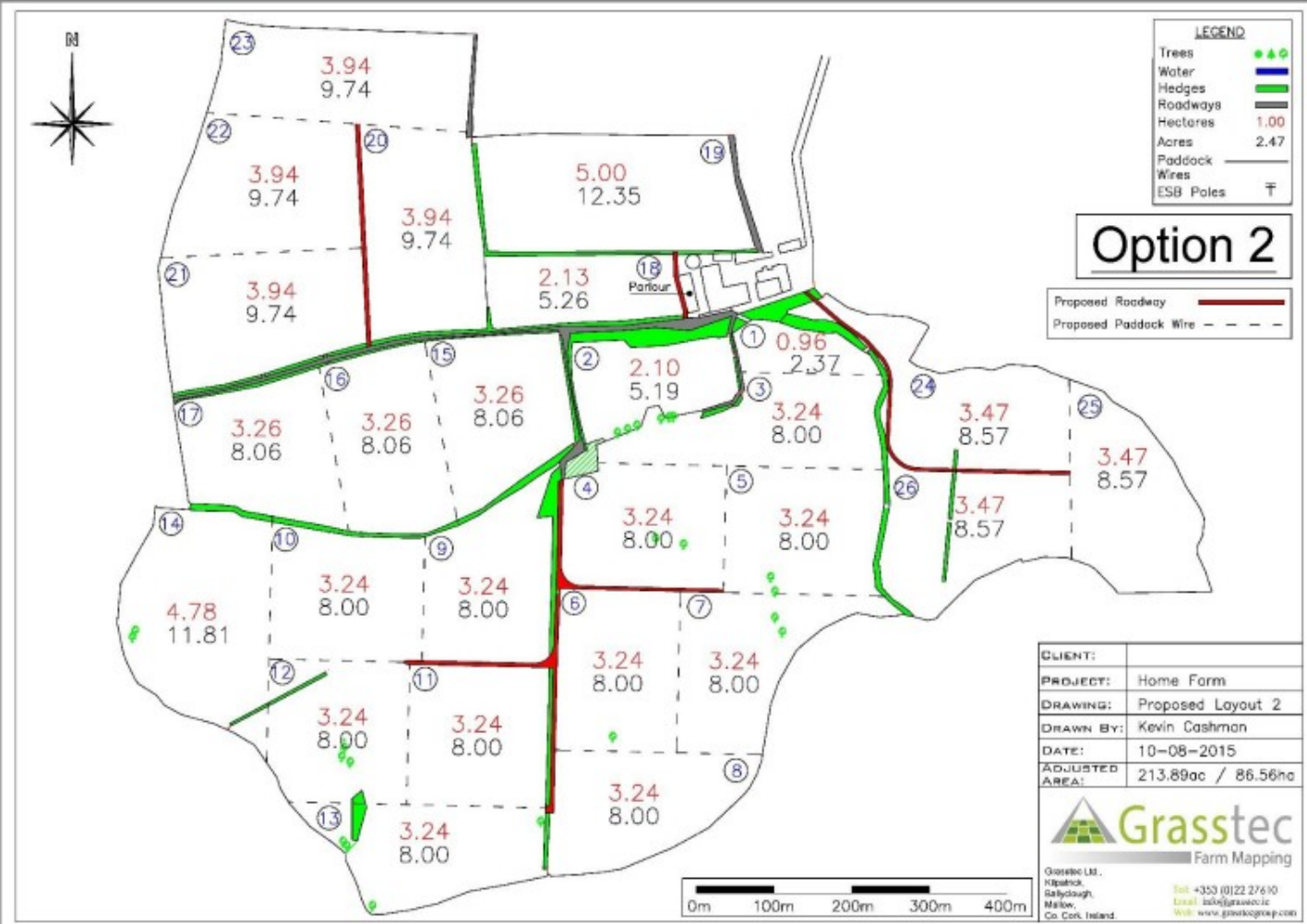
- 100 cows require 1 hectare for 24 hour allocation (2 milkings)
- 100 cows require 1.5 hectare for 36 hour allocation (3 milkings)

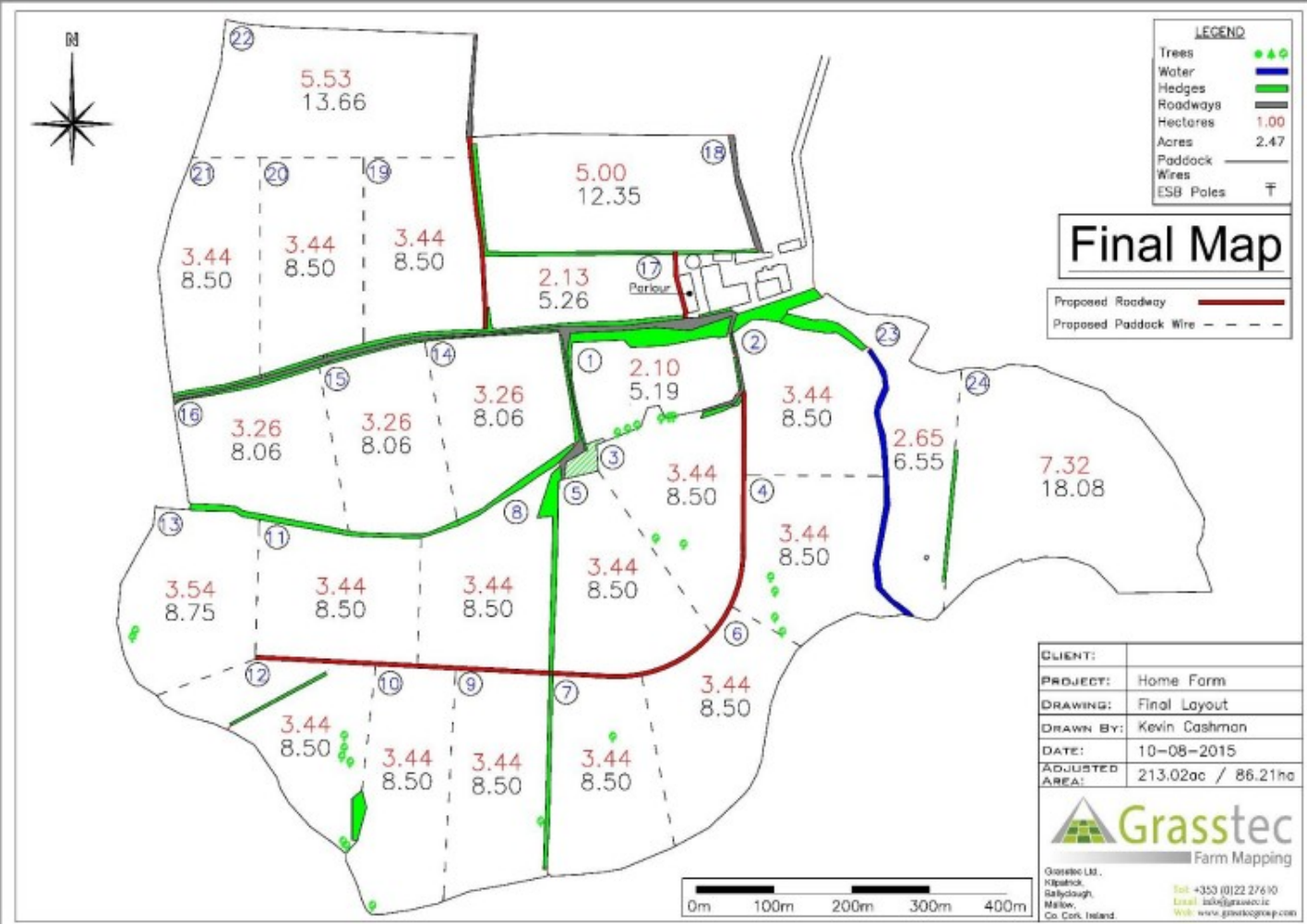
How to work out a paddock size?

- $180 \text{ cows} / 90 = \text{paddock size in hectares}$









Positioning Straining Posts

Option 1

Dimensions Supplied in Meters

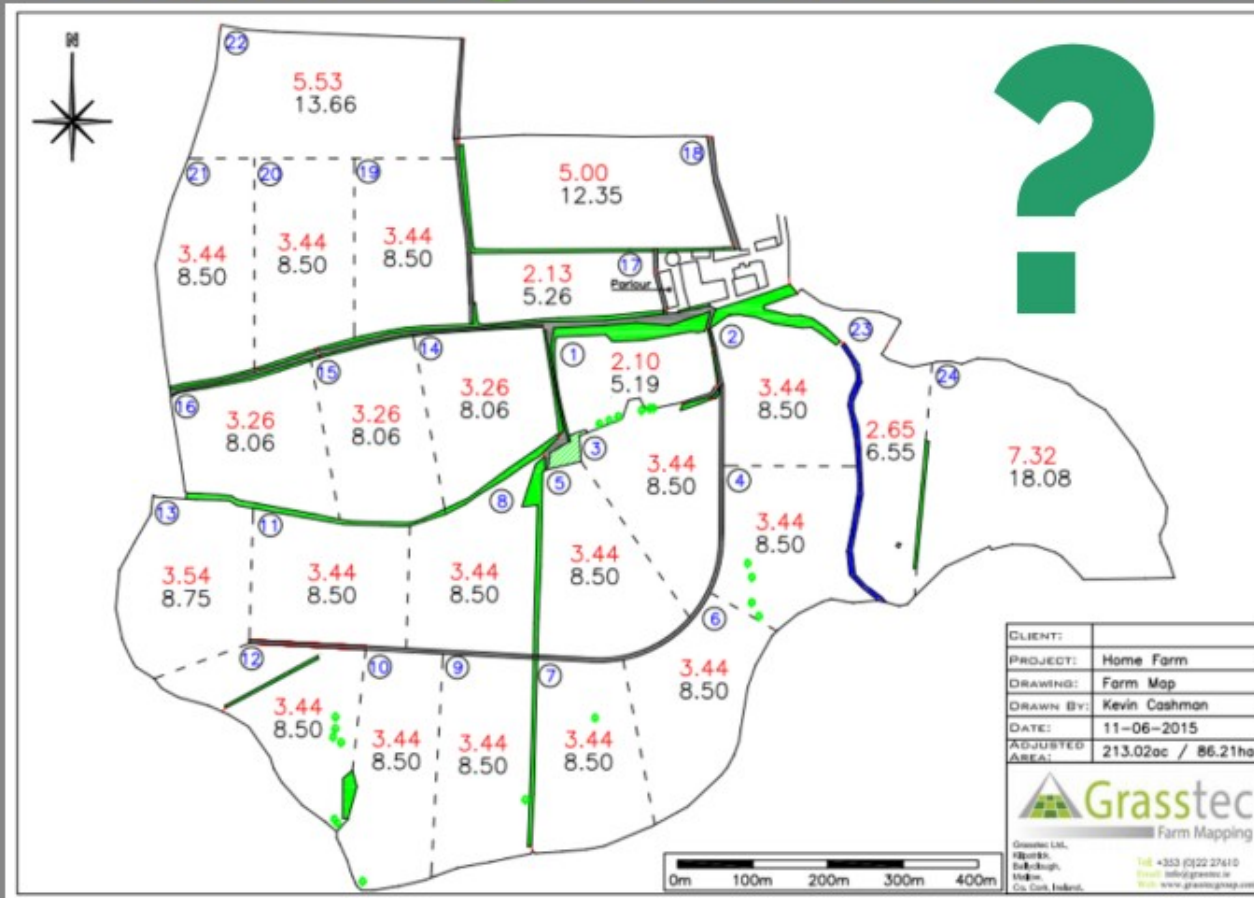


Option 2

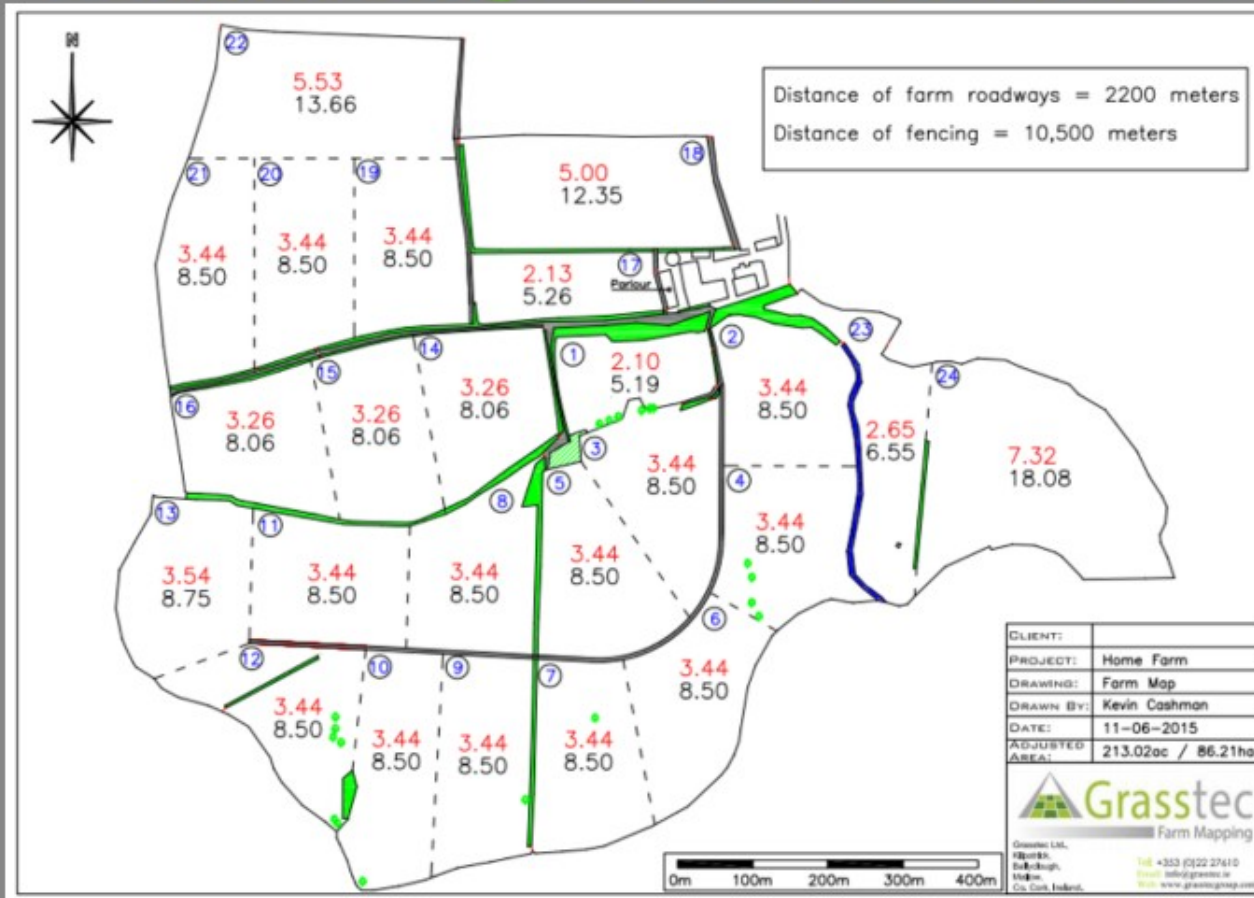
Mark the positions using GPS



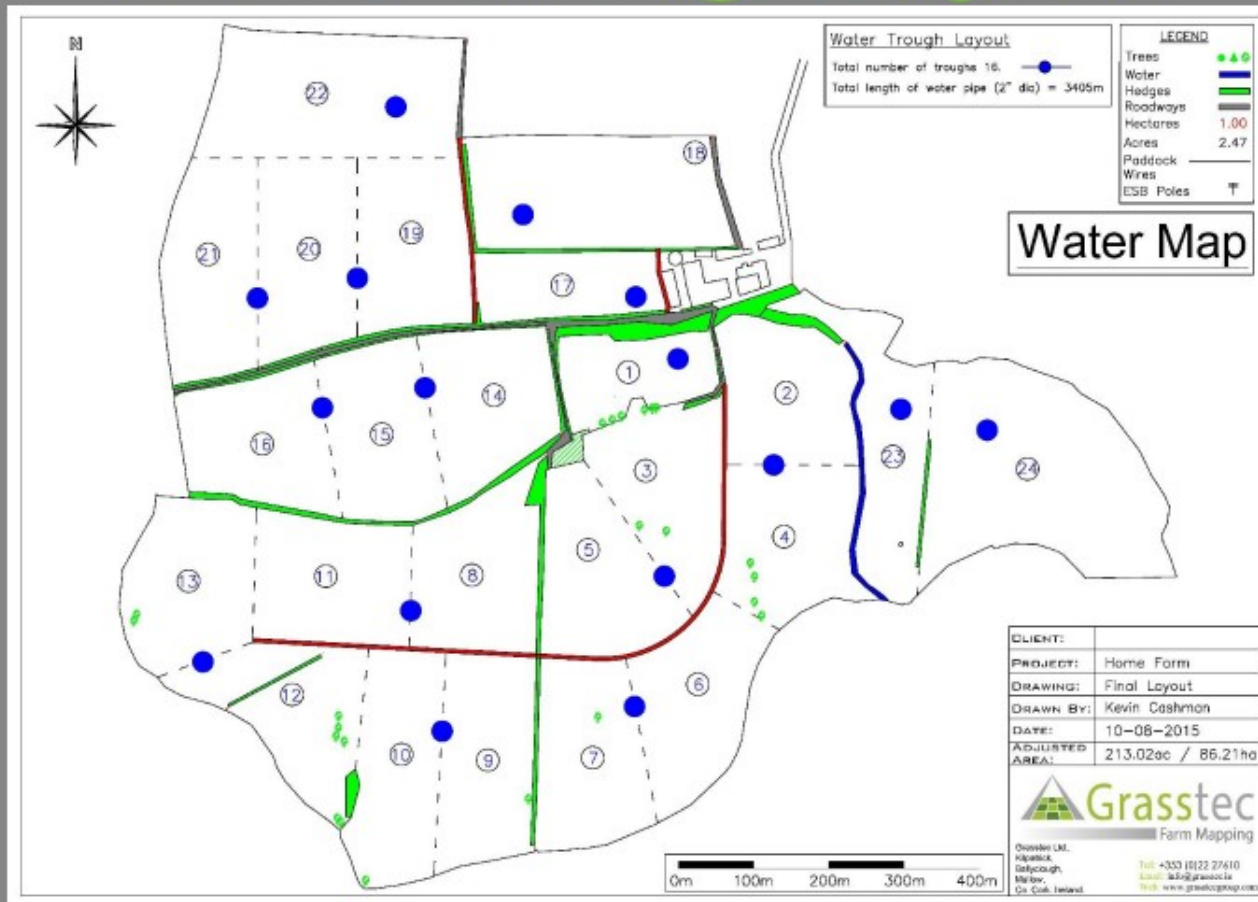
Summary of Distances



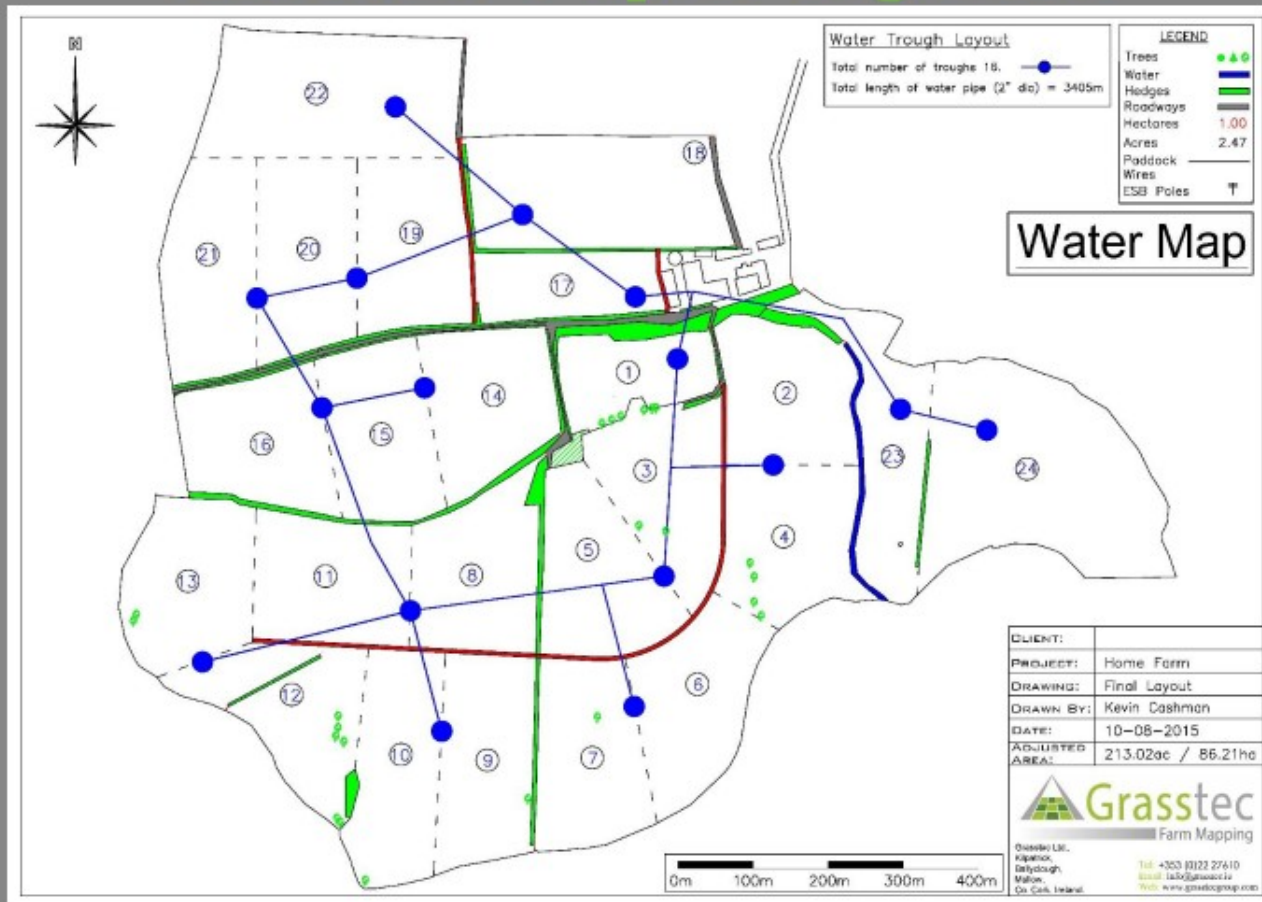
Summary of Distances



Water Trough layout



Water Pipe layout



Costings

Fencing:

10,550 meter of fencing costs?
= €1.10 per meter

€11,550

Farm Roadways:

2,200 meters of roadway
€30 per linear meter

€66,000

Water System

3400 meters of 50mm pipe
€3.00 per meter or €10,200
16 no. trough 400 gallons in size
€380 each or €6080

Valves & manholes
€1500

€17,780

Total = €95,330

Sequence of Work



1. Install water



2. Construct roadways



3. Reseed



4. Fence installation

Summary

Key Requirements for Efficient Grazing Infrastructure

- Farm Roadways
- Good paddock & fencing system
- Adequate water system



Take Time to Plan

- Minimise mistakes by planning on paper