



Design of a Solar Powered Irrigation System for the Pangalata association in Moamba, Mozambique

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2024



This project has been proposed by Universidade Pedagógica de Maputo



With the support of the Ministry of Science and Technology and High Education



Implemented by PRACTICA & HUB



Commissioned by UN Environment, CTCN, Adaptation Fund



Disclaimer:

This document is an output of the Technical Assistance Response in Mozambique. The present report is the output of the project 'Solar based irrigation business model 'pay as you irrigate' for women empowerment, water management and food security in Mozambique. The views and information contained herein are a product of the international TA implementation team led by PRACTICA & HUB.

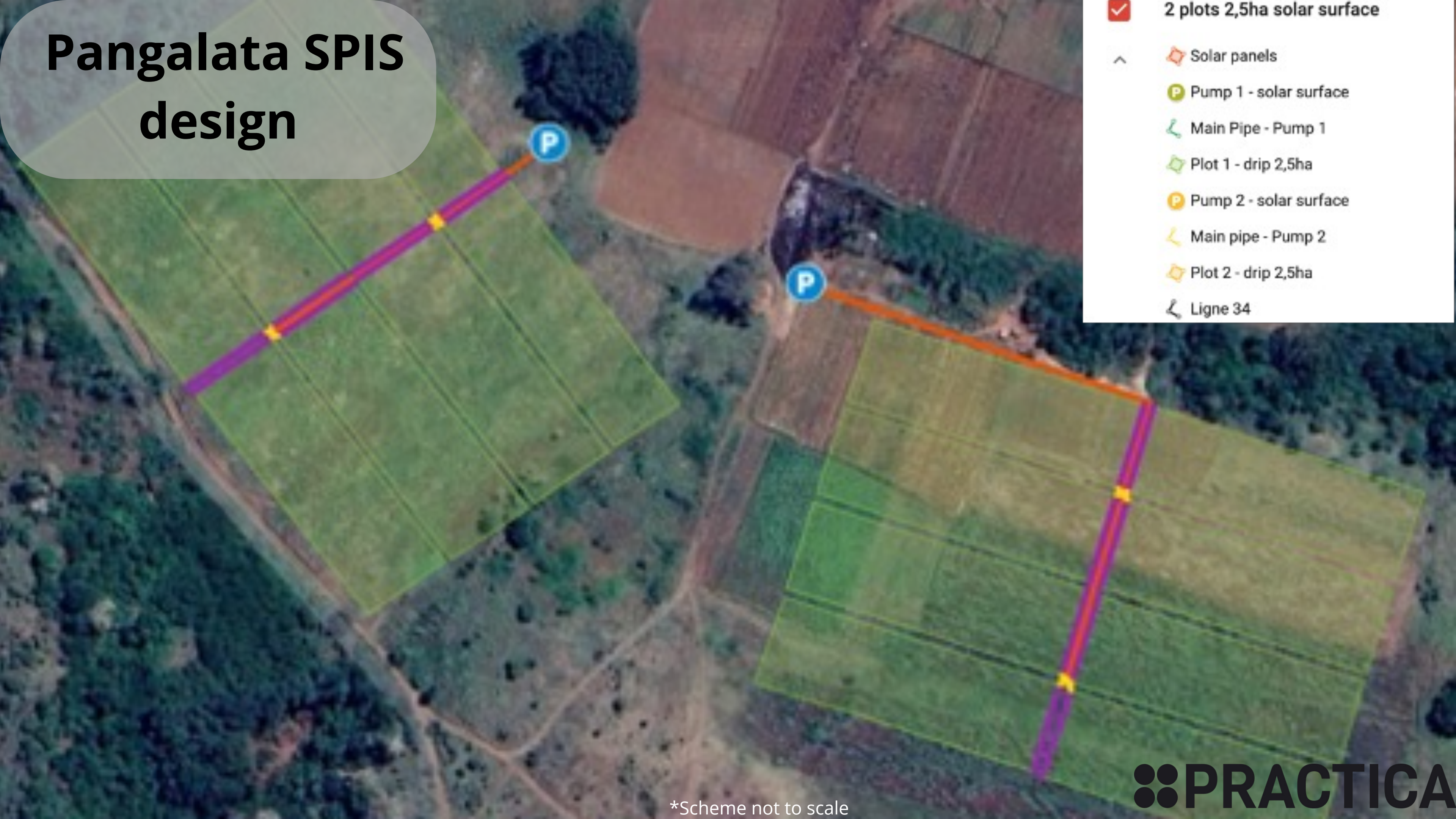
Conten

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1. Pangalata association fields overview
2. General design
3. Pump and solar panels detail
4. Sub-unit drip irrigation detail
5. Irrigation Management

Pangalata SPIS design

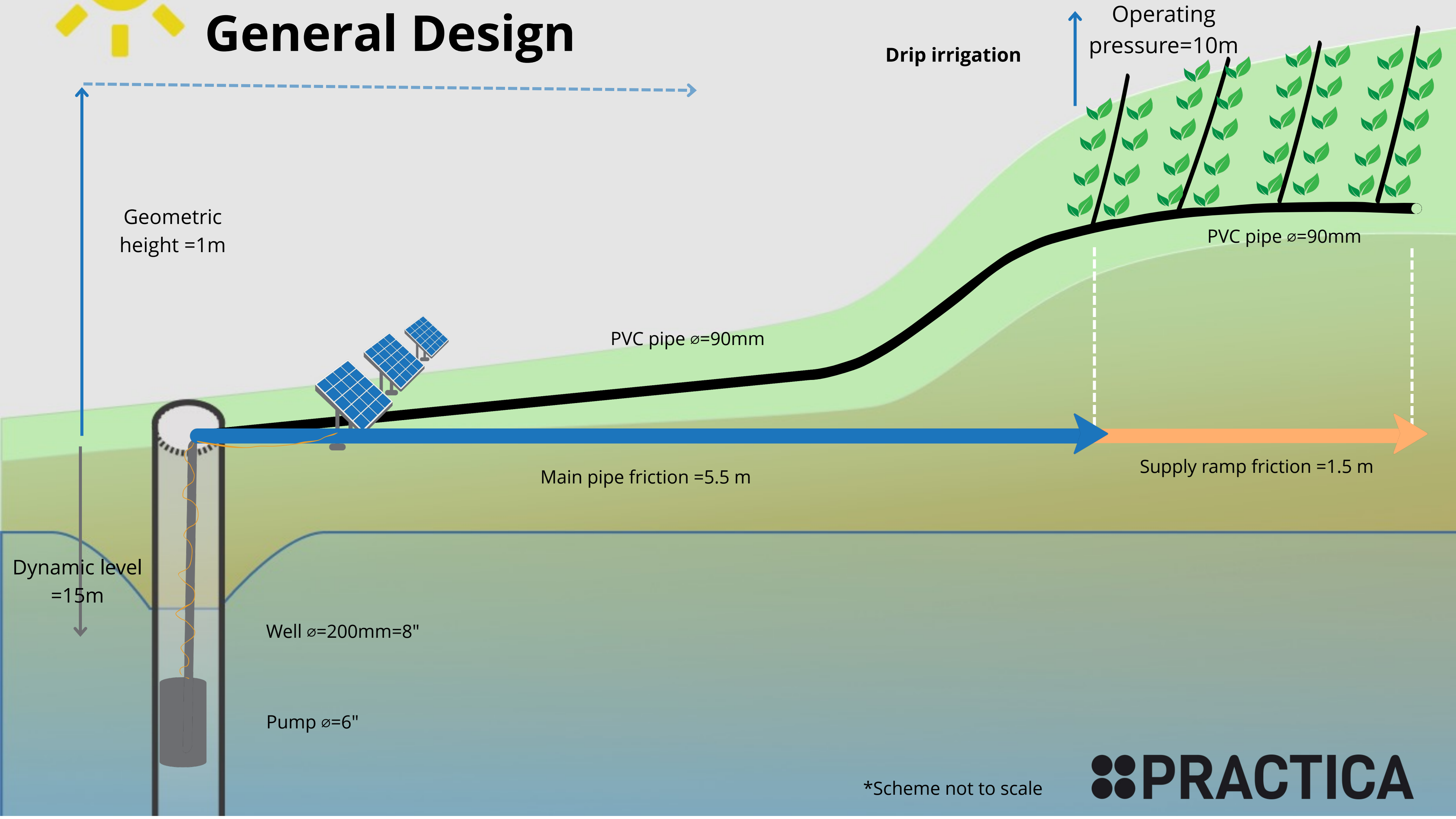
- ✓ 2 plots 2,5ha solar surface
- ^ Solar panels
- P Pump 1 - solar surface
- ↪ Main Pipe - Pump 1
- Plot 1 - drip 2,5ha
- P Pump 2 - solar surface
- ↪ Main pipe - Pump 2
- Plot 2 - drip 2,5ha
- ↪ Ligne 34



*Scheme not to scale



General Design

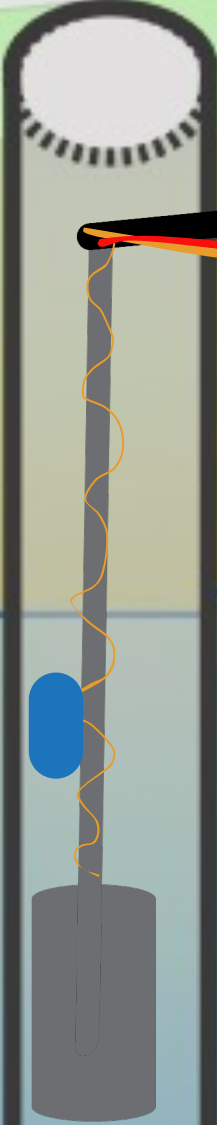
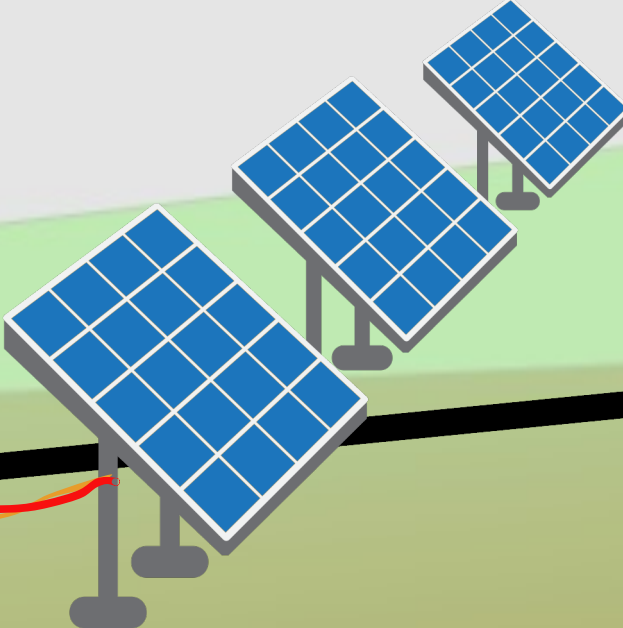


*Scheme not to scale

Detail pump and solar panels

Minimum solar panel power= 8.4 kW

Controls box



Well diameter 8" (200mm)
Depth 25 m

Submersible Pump Lorentz or Grundfos diameter 6"

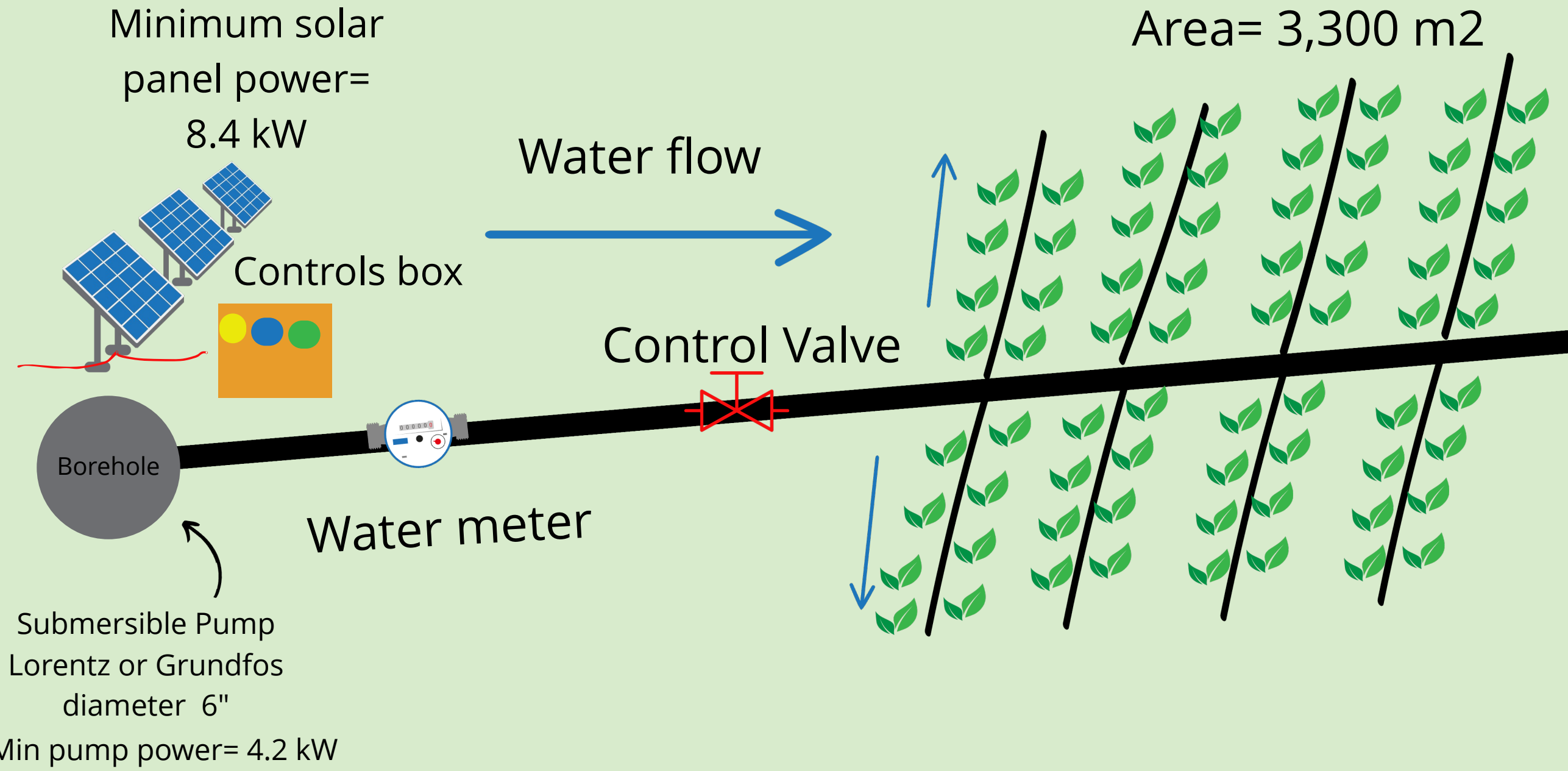
Min pump power= 4.2 kW

Well probe sensor

*Scheme not to scale

Detail sub-unit drip irrigation

Sub-unit information



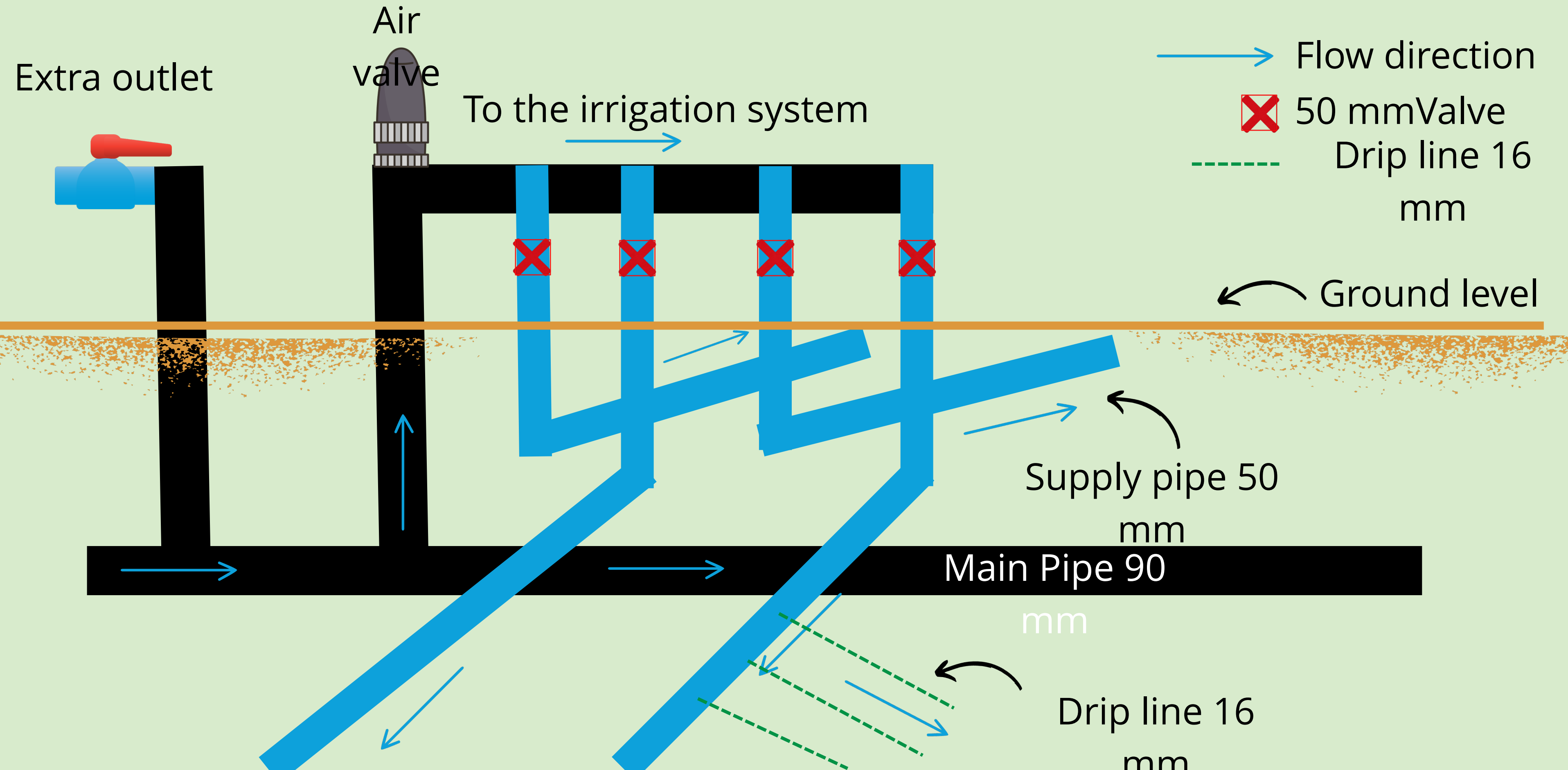
Spacing between emitter (m)	0.3
Irrigated plot configuration	Mirror
Dripper line length (m)	100
Spacing between drip lines (m)	0.5
Emitter flow (l/h)	1
Operating pressure (m)	10

*Scheme not to scale

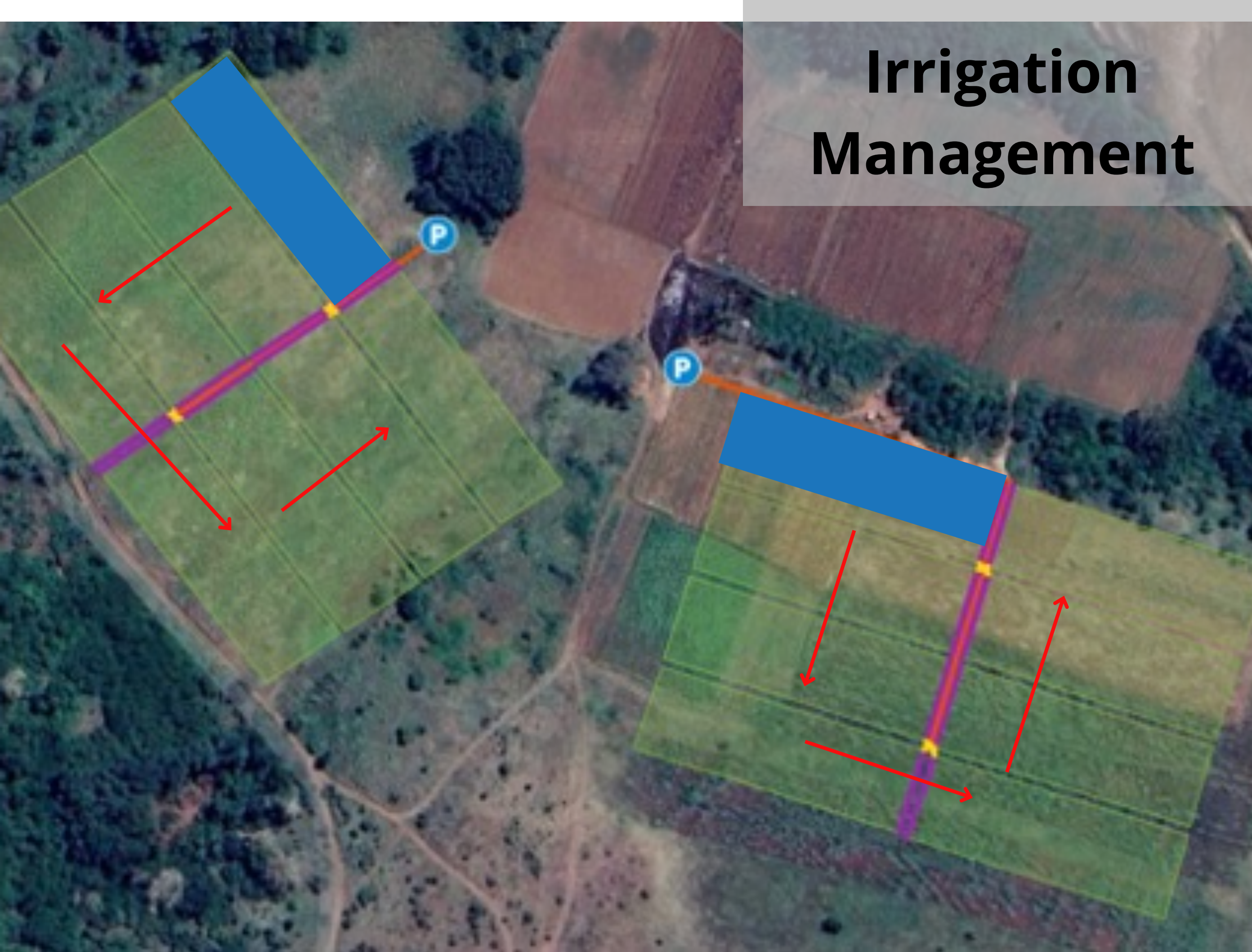
Detail Valves Control

*Scheme not to scale

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Irrigation Management



Irrigation cycle information

Number of lines used per irrigation cycle	66
Duration of an irrigation cycle (min)	00h 40min
Irrigated area of one irrigation cycle (m ²)	3,300
Total irrigation time (hours)	5.1

 Irrigated area of one irrigation cycle

 Direction of irrigation cycles

*Scheme not to scale