

How to Use the Small Farm Dam Planning Tool

This guide shows you how to access and use the Small Farm Dam Planning tool, with step-by-step instructions and annotated screenshots.

1. Accessing the Calculator

- Go to the project landing page (<https://fdfdams.cerdi.edu.au/>).
- Click the “Planning Tool” button/link.
- This opens the calculator in your browser.

 Small Farm Dams



Australian Government
Department of Agriculture,
Fisheries and Forestry



Future
Drought
Fund



Federation
University

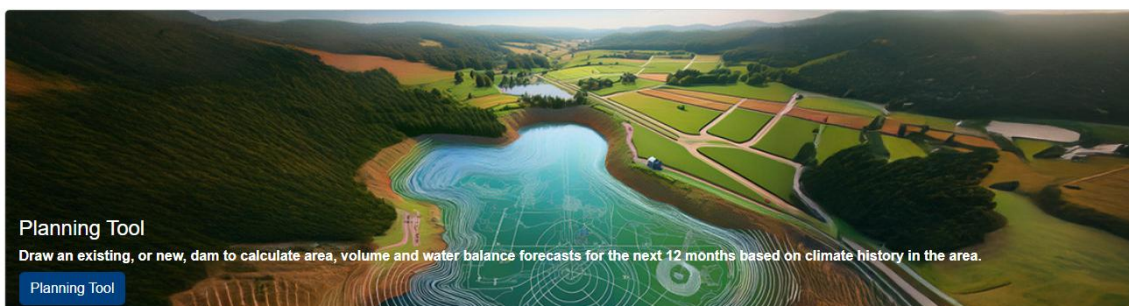
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Assessing the suitability of existing dams to prepare for, cope with, and recover from drought

Farm dams are critical to farming properties, but they are limited in their capacity to hold water for extended periods and rely on regular rainfall to fill them.

Their vulnerability during drought periods has researchers looking into small farm dams.

Southern Farming Systems is leading a project with researchers from Federation University, to help understand small farm dam hydrology and help improve decision-making during drought and a future impacted by climate change.



2. Step-by-Step Instructions

Step 1 – Identify Dam Location

- Use the map to zoom to your farm.
- Place a marker on the dam site.

Custom Dam Tool

1. Dam area

2. Dam profile

3. Climate estimates

4. Water balance forecasts

Instructions: Draw the dam boundary, then draw the surrounding catchment boundary to calculate the respective areas. Dam boundary is the estimated boundary when 100% full.

a: Draw dam boundary

Draw dam

Clear

☒ Load auto-saved dam and catchment

b: Draw catchment boundary

Draw catchment

Clear

Auto calculated variables


Dam area: m²

Catchment area: m²

Continue: Dam profile →

Satellite View

Street View



Search location...

Search

Map data © Google

Note: Drawn dam boundaries must be approximately circular or square shapes, complex shapes are not supported by the water balance model.
Modelled shape types include Spherical Cap, Ring Tank, and Truncated Pyramid.

Step 2 – Draw Dam & Catchment

Draw dam surface area (when full) and watershed catchment. Dam area and catchment area are automatically calculated.

- Draw the outline of the dam surface area (when full).
- Draw the outline of the catchment area feeding into the dam.
- The calculator automatically estimates both areas.

Custom Dam Tool

1. Dam area

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Instructions: Draw the dam boundary, then draw the surrounding catchment boundary to calculate the respective areas. Dam boundary is the estimated boundary when 100% full.

a: Draw dam boundary

Draw dam

Clear

☒ Load auto-saved dam and catchment

b: Draw catchment boundary

Draw catchment

Clear

Auto calculated variables


Dam area: 1244.3 m²

Catchment area: 35368.6 m²

Continue: Dam profile →

Satellite View

Street View



Search location...

Search

Map data © Google

Note: Drawn dam boundaries must be approximately circular or square shapes, complex shapes are not supported by the water balance model.
Modelled shape types include Spherical Cap, Ring Tank, and Truncated Pyramid.

Step 3 – Describe Dam Profile

- Input dam depth and side slopes.
- Select dam type if options are provided.

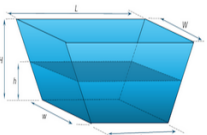
Custom Dam Tool

1. Dam area
2. Dam profile
3. Climate estimates
4. Water balance forecasts

Instructions: Select the profile that most closely matches the shape of your dam walls. Estimate the dimensions of the dam as accurately as possible to determine the maximum volume.

Select a dam profile

Truncated pyramid



L = length of dam when full
 W = width of dam when full
 l = length of dam when empty
 w = width of dam when empty
 H = maximum depth when full
 h = current (or actual) water depth

Dimension estimates:

Maximum depth when full: 3 m

Current (or actual) water depth: 0 m

Length of dam when full: 35.3 m

Width of dam when full: 35.3 m

Length of dam when empty: 20 m


Width of dam when empty: 17.9 m

Auto calculated variables

Dam area: 1246.09 m²

Catchment area: 35368.6 m²

Maximum volume when full: 2272 m³



Clear measurements

Map data © Google

← Back Continue: Climate estimates →

Step 4 – Choose Climate Estimates

- Select a nearby weather station or regional climate dataset.
- This sets rainfall and evaporation estimates.

Custom Dam Tool

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Step 3: Climate Estimates

Instructions: The monthly rainfall and evaporation range for the selected dam location has been estimated from the previous 30 years of [SILo weather data](#).

Climate estimates: Previous 30 years

Auto calculated variables

Dam profile: Truncated pyramid

Dam area: 1246.09 m²

Catchment area: 35368.6 m²

Maximum volume when full: 2272 m³

← Back Continue: Water balance →

30 year climate range Drought Average Wet

Rainfall range

Evaporation range

Yearly totals	179.7 mm	534 mm	688 mm	1671.2 mm	1322.2 mm	1223.4 mm
Monthly totals	Rainfall range					
January	3.8mm	34.8mm	48.5mm	235.2mm	194.5mm	180.6mm
February	2.9mm	23.2mm	35.6mm	191mm	162.5mm	148.4mm
March	10.2mm	28.5mm	39mm	170.5mm	131.5mm	124.2mm
April	12.1mm	55.4mm	63.5mm	109.7mm	82.6mm	75.2mm
May	15.5mm	45.7mm	58.2mm	84mm	53.8mm	48.6mm
June	24.5mm	53mm	64.3mm	53.9mm	40.5mm	37.5mm
July	19.7mm	55.6mm	68.1mm	64.8mm	48mm	42.4mm
August	20.2mm	56mm	66.6mm	82.7mm	64.9mm	58.9mm
September	21.4mm	47.8mm	62.6mm	109.6mm	93.6mm	84.9mm
October	9.9mm	48.2mm	64.6mm	162.6mm	121.3mm	114mm
November	25.3mm	50.1mm	69.9mm	175.7mm	148.5mm	136mm
December	14.2mm	35.7mm	47.1mm	231.5mm	180.5mm	172.7mm

Step 5 – Estimate Water Use

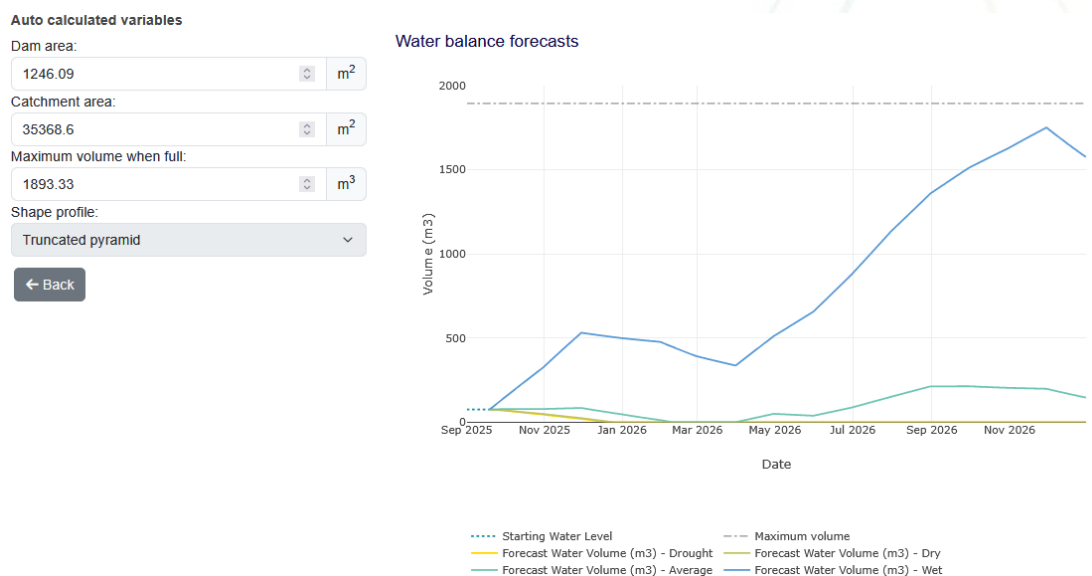
- Enter number of livestock and domestic water demand.
- The tool will estimate daily/annual use.



Step 6 – Review Capture Likelihood

The tool models how often the dam will fill or dry under wet, average, and dry years. Examine likelihood of volume capture (in this example even in a wet year this dam will not fill if starting from dry. Example:

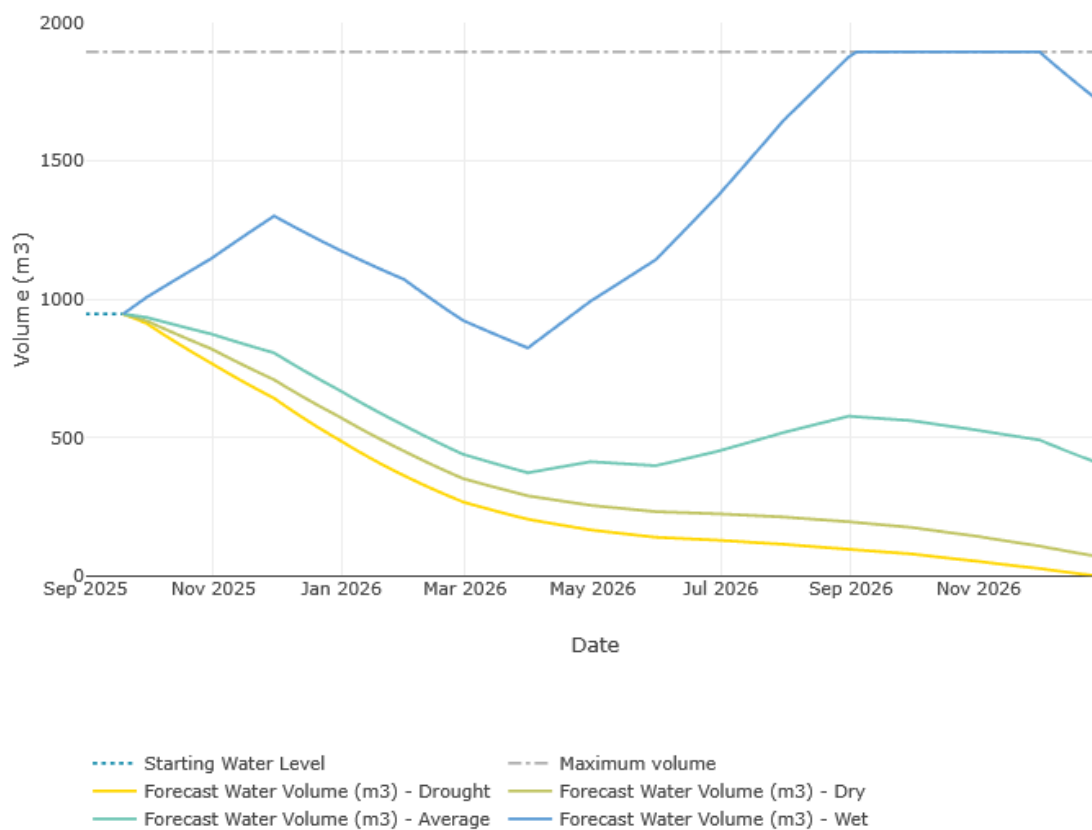
- Starting empty → dam unlikely to fill, even in wet year.



However if the dam was half full then the dam would overflow in a wet year, but decline in an average year and be totally dry in a drought. Example:

- Starting half full → dam overflows in wet year, but empties in drought year.

Water balance forecasts



3. Tips from the developers

- Use the zoom/pan tools carefully to outline accurate catchments.
- Start with smaller catchments if drawing is difficult, then adjust.
- Compare different scenarios (e.g. half full vs empty) for resilience planning.
- Save/export results for future planning discussions.

That's it! You can now estimate your dam's capacity, catchment inflow, and reliability to support water planning.