

# Professional Farm System Design: Planning and Implementation of Practicing Controlled Traffic Farming

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Firstly, there are some basic concepts that need to be understood when planning Controlled Traffic Layouts :

1. The differences between a “map” and a “drawing” or a “photo” and photos’ can be a panorama or horizontal and Geo-referenced.
2. The understanding of “I” and “You”. This may seem of little relevance but it is very important to achieving high quality layouts at the first attempt. A critical reviewer of your planning will considerable value to your planning process.

## MAPS

A properly made map has 5 elements:-

1. It has a TITLE
2. It has a BORDER
3. It has a NORTH SYMBOL
4. It has a SCALE
5. It has an AUTHOR

Why is it important to highlight these elements of a properly made map?

Irrespective of the image on the page a map is a 2 dimensional representation of a 3 dimensional model, the earth, and therefore there are difficulties. However maps allow detailed planning using either hard copy or desktop applications to be confident of adopting this planning “on-farm”.

## TITLE

Each map is based on a theme, therefore the use of a title.

It tells what the map represents. At this conference we will review topographic maps, either based on contour lines, drainage systems or drainage patterns using point runoff directions. Computers add value in reviewing these different applications. The basic ‘x,y,z’ co-ordinates collected by high resolution G.P.S. equipment may be presented in different formats.

I have coloured impaired vision and colour wash does not appear to add value to my planning. Chose one that is suitable for you.

## BORDER

Most people, in this room over the last 20 years or so, would have attended some form of Property Management Planning Workshop, latterly computer supported, where you were given, or purchased, a “Whole Property Map” based on air photos, or photo mosaics for larger properties. With Controlled

Traffic Farming (C.T.F.) layouts we tend to start at the paddock scale and move toward a whole property layout, therefore a border allows a clear focus to the area, which is important

The critical element of planning, from my perspective, is 'access', the ability to move machinery, inputs and product as quickly and efficiently as possible.

At the paddock scale it is critical to evaluate access in terms of planting, spraying and harvest but not in conflict with the down-slope layout.

At the whole property scale access is critical for collecting, storage or straight to delivery. Again, boundaries allow you to focus on the most important element.

Contour maps (topographic maps) at different scales should be your first preference for planning, access and at any scale but may need manipulation of contour interval.

## **NORTH SYMBOL**

All maps feature a "North" symbol and usually the text is West to East (text for streams, rivers, etc are usually aligned with the shape of the drainage system). This is convention, but we can use this to plan layouts, particularly for light (day length) sensitive crops. In the lower latitudes of Australia one needs to be more sensitive to row or bed direction. Canola or grapes, for example, probably need to run North-South and this will bring maturation together.

In relation to the North symbol, you should investigate your map, if using G.P.S. derived images, a number of different map projections are being used, either based on latitude and longitude or map grids.

Modern maps should be based on M.G.A. (Map Grid Australia 94) this is the standard used. This is not a magnetic projection, but based on a system of grids a number like 55/56 the "Parallels" North to South and the letter 'J' etc the parallels East to West.

This map system is convenient in that basic tools, such as a ruler, can measure (on a map) or a tape (on the ground) from one known point to an unknown point.

I don't know if the difference between Magnetic North and Grid North has a significance when planning for bed and row direction.

## **SCALE**

Usually, in properly made maps, scale is one of two formats, 1:25,000 or a scale bar, or in a well made map both scale bar and numeric scale will be indicated. Both are relevant and because, these days, it is easy and cheap to copy maps either using computers or photocopiers. It is critical that the scale bar (at least) is included on a map.

In the reproduction of a map the basic image may be at A3 but most copies are on A4.

The scale of the map will be different, but a ruler will allow you to reconfigure the actual scale of the content of the image. Even a photocopy or a facsimile reproduction may vary the scale.

It is my experience that G.I.S. Technologists do not understand the value of scale, or the importance of representation of a useful scale, e.g. 1:100,000, rather than 1:100,200, or 1:20,000 rather than the enlargement 'fit to page' of 1:17,625.

## **AUTHOR**

Not so important, but particularly relevant if you are using images and then an overlay to do basic planning, using a paid or unpaid Consultant. Always add the planning date.

At some time in the future you may compare the overlays or do more planning. The Author and date will allow you to remember the decision making process. This is also where the “I” and “You” come in.

Whether you are using a Consultant, paid or nor, a friend, family member etc., value their input, they can help in your planning

People who don't understand your day to day operation may add considerable value to your planning process by asking basic questions, “Why do you do it like that?”. There are no “right answers”, just some a lot better than others.

A logical preference for planning a C.T.F. layout is based on the following elements:-

1. Layouts which are free draining  
There is now a body of evidence that strip cropping is not a free draining layout and ‘race track’ layouts are not free draining.  
Water logging, ponding, at any time of the cropping cycle is detrimental to yield.  
Rainfall which exceeds infiltration needs to be managed ????
2. Access in paddock – whole farm should be focused on ridges or constructed.
3. Use “can't change” as a basic tool e.g. boundaries, etc
4. Diversion structures where needed are integral to layout protection.
5. Try agronomic protection before mechanical support, e.g. drainage.