

Developing assets with less water

Get to the point ...

It takes a lot of experts to develop urban assets. They have to be innovative, efficient and good to work with. They have to be the best. And these days that means do more with less water, less money and less time.

Consider the POC, Point of Connection - that mysterious place in design space where the landscape architects and hydraulic engineers realise they have a different opinion about 'an important plant' and 'enough pressure'.

The point? The point is that irrigineers (irrigation engineers) get the point. They understand how important it is to get the right amount of water to plants, and the mech-elec needed to make it happen. They have a unique mix of agronomic and engineering skills because they live in a strange world of soil and ET sensors, pumps and pipes, pop-ups and drippers, irrigation plans and recycled water flowing underground.

Independent advisors to asset owners

Have a look. Behind every successful developer and landscape architect is an irrigineer – an independent professional irrigation designer. HydroPlan claims to have invented irrigineering, and for 25 years has been quietly saving water and sequestering carbon in turf and landscapes whilst others talk about it. We were saving water before the restrictions and we won't stop now that they are off.

Owners want their advisor to be independent of the costs that they help them manage. The few percent spent on planning and managing will have great leverage over the remainder – particularly when water efficiency reduces infrastructure size and costs. They can afford to find and pay for the best advice, because.... because they can't afford not to.

If the first decision is to defer costs by getting free advice or D&C, then the owners will defer spending a few percent, and pay much more than that later.

Making the difference

◆ **Water supply & pumping;** Well-designed pump stations save enough energy, labour and maintenance costs to pay for themselves. Each pump has to operate efficiently across the anticipated range of duty points, and often cater for prioritised blending different of water sources as well.

◆ **Good hydraulic design;** A robust water management tool has to be designed specifically to suit the soil type, the landscape design, and the enterprise. A well-conceived irrigation master plan builds on existing assets and caters for opportunities should they arise.



◆ **Control and monitoring;** Automation reduces the total ownership cost of an irrigation system by saving labour and by allowing schedules to change quickly with the weather. Real time data from soil probes, power and water meters, and other sensors is a powerful management tool.

◆ **Installation and project supervision;** No matter how well designed your system is, if it is not installed correctly it will be a headache. So we work with your local contractors and monitor their installation periodically so that we can say to you "Yes, it is installed and working as specified."

◆ **Documentation;** Concise contract documentation is important for successful delivery of projects. And as-constructed drawings are vital for asset owners and operators because these particular assets are mostly buried from view.

How do irrigineers help?

The designs, specs, processes and advice from irrigineers will help you buy wisely in a rapidly changing industry, and to fix nothing unless it's broken. They know which products work and which contractors don't. They know how to optimise life cycle costs and save water, capital and energy.

They often have a degree in something and are 'certified' as irrigation designers (CID), irrigation agronomists (CIAG) or irrigation auditors (CIA). After 8 years in Queensland, they also include a BSA licensed plumber and an RPEQ engineer.

Importantly, irrigineers are independent of the costs that they help you manage. They don't supply or install equipment. Instead, like architects or consulting engineers specialising just in irrigation, provide as little or as much help as you want.

We help develop the assets you want, with less water.

Dispersal, disposal or reuse?

Effluent water is a 'valuable nuisance'

Whilst effluent water may be a nuisance, once treated it is also a valuable resource to any establishment whether it is a home, caravan park, service station, mining/construction camp or community. So at a very early stage, the objectives for the waste stream have to be made clear so that those involved understand just how valuable (or not) this nuisance is. Too often the objectives are unclear and the waste water creates more waste - wasted opportunities or wasted capital.

Dispersal, disposal or reuse?

It is often a fine line whether effluent dispersal is considered to be disposal or reuse. Irrigation systems are actually a cost effective means of achieving both.

The extent to which water and nutrients are reused and absorbed by plants and the environment depends on the design and operation of the system. To be efficient and sustainable, this requires calculation and monitoring of 'water balances' for transpiration, evaporation and infiltration whilst taking into account the weather as well. Otherwise the so called reuse system will be an environmental problem!

How can irrigineers help you?

Our irrigation engineers (irrigineers) have been designing systems for 25 years, worldwide. We have Licensed Plumbers, Certified Irrigation Designers and Agronomists, RPEQ engineers, and BSA License's - all experienced in designing these systems. Come and have a talk with us.

Poorly designed systems don't achieve your objectives and have a limited life expectancy. Once constructed to a wrong design, the list of salvageable parts may be depressingly short. So don't take that chance - let us design your effluent dispersal system for you. Someone has to design it, so why not get it done by an independent expert that doesn't push a particular type of system or solution. We don't supply or install. We are your "hired help" - as little or as much as you want - to help you buy wisely and manage your system well.

Getting it right first time

The factors to take into account when using irrigation as a method of dispersing treated effluent include:

- ◆ **Effluent quality:** The effluent quality depends on the treatment and filtration system you have and the type of effluent being treated. Suspended solids, nutrient content and microbiology all affect the way in which the treated effluent interacts with soil, plants and animals in the dispersal area.



- ◆ **Soil type:** Irrigation puts the treated effluent onto or into the soil, but it must move in the soil so that it spreads evenly, doesn't pond, and is generally readily available for either evaporation or take up by plants. The soil type and depth of the soil profiles influences the type of irrigation to use, and the spacing and flow rate of water outlets.

- ◆ **Water balances:** Designers and operators have to determine how soon a given area can again be used for effluent dispersal. Too long a period and plants begin to wilt and die. Too short a period and ponding, soil saturation, water tables and disease are potential problems.

- ◆ **Irrigation type:** The choice of irrigation type hinges on all of the above factors and more. Because of health risks (perceived and real) from human contact, sub-surface drip irrigation with a lower quality treatment process may be a good choice. Sprinklers can be fine too - provided that risks have been addressed and the water is fit for purpose.

- ◆ **Monitoring and maintenance:** Standard Operating Procedures for monitoring and maintenance activities are an important part of OH&S, asset management and compliance. The right balance between automation, training and common sense are.

Where do you start?

An efficient irrigation system will connect the soil and plants at one end so they can pull just the right amount of water through from the other end.

Do the plants suck the water through, or do the pumps push it out? Which end do you start at? Well... it depends if it is dispersal, disposal or reuse! Start at the beginning - call us!

Don't horse around with irrigation

Looking after horses

Have you ever wondered what it takes to grow the right grass for horses to eat, and the right turf for them to race on?

It takes a lot of expertise and hard work from a lot of people, and part of that comes from an irrigation engineer (irrigineer) – the professional designer and advisor on the irrigation and water supply system.

You'll probably find an irrigineer behind every successful horse stud, turf club and equine architect. After specialising in this field for 25 years, HydroPlan claims to have invented irrigineering because they have a unique mix of agronomic and engineering skills and they live in a strange world of soil and ET sensors, pumps and pipes, pop-ups and drippers, irrigation management plans and recycled water flowing underground.

From the paddock to the track

Even after the drought, a reliable supply of suitable water and a robust watering system is essential to maintain pastures and racing tracks whether they are turf, sand or synthetic.

From the paddock to the track, irrigation plays a key role in the health and safety of our equine friends.

From horse studs like Darley, Coolmore and impressive private agistment and training facilities, to international tracks like The Hong Kong Jockey Club, and local ones like Tamworth, Muswellbrook, Inverell and Albury – you'll find that HydroPlan's irrigineers don't horse around!



Looking good

Let's be frank. Equestrians aren't the only ones that have to perform to win and to look good. Sure the irrigation has to work to its best possible performance (shoot it if it doesn't), but the results have to look good too.



These stakes keep getting higher

Water is increasingly expensive and scarce, harder to protect, and harder to manage. Water quality must suit the soil, the application and the environment. Treated urban or industrial effluent, storm water, managed aquifer recharge – they all sound great but at what total cost to the business?

Good labour and advice is also getting scarce. Someone has to ensure that the drainage is right, that the pump stations are energy efficient, and that the data gets collected from sensors and delivered to where it is needed.

How do irrigineers help?

The designs, specs, processes and advice from irrigineers will help you buy wisely in a rapidly changing industry, and to fix nothing unless it's broken. They know which products work and which contractors don't. They know how to optimise life cycle costs and save water, capital and energy.

They often have a Degree in engineering or agriculture, or Diploma of Irrigation, and are 'certified' as irrigation designers (CID), irrigation agronomists (CIAG) or irrigation auditors (CIA). But their main qualifications come from experience.

Importantly, irrigineers are independent of the costs that they help you manage. They don't supply or install equipment. Instead, like architects or consulting engineers specialising just in irrigation, provide as little or as much help as you want.

Saving time and money

The few percent that you spend on planning and managing will have great leverage over the other 95% - particularly if you learn you only need to spend half what you thought! You can afford to find and pay for the best advice, because.... well, because you can't afford not to. Call us – we can help.

How can an Irrigineer help you?

Irrigation is a management tool not just a way of wetting the ground...

The cost of water and power is spiralling up and up. And labour costs a fortune if you can find it. With the Aussie dollar worth more than the greenback, "the best farmers in the world" have to do more with less, get better production from our soils with less fertiliser, get more work done with less labour, get the best benefit from every drop of water, and kilowatt of power used. It's a big ask!

Irrigation is a management tool that can make our farms work for us - rather than us working for our farms (and the banks).

An Irrigineer (irrigation engineer) is your independent strategic advisor

Irrigation is a big part of the cost of farming. It is a heavy capital investment and a major ongoing running cost and maintenance cost. A well designed irrigation system has the capacity to manage and minimise these ongoing costs.

It is important that your advisor is independent of the costs that they help you manage. The few percent that you spend on planning and managing will have great leverage over the other 95%. You can afford to find and pay for the best advice, because.... because you can't afford not to.

If your first decision is to defer costs by getting free advice, then you'll defer spending a few percent, and pay much more than that later.

Making the difference that will help you achieve some of your key goals

- ◆ **Good hydraulic design;** A robust management tool has to be designed specifically to suit your soil type, crop type and weather, and also your enterprise. We work with you to develop an irrigation master plan that builds on your existing assets and lets you plan ahead for opportunities to arise.
- ◆ **Pumping system;** Well-designed pump stations will save enough on energy, labour and maintenance costs to pay for themselves. Each pump has to operate efficiently across the anticipated range of duty points, and this may warrant losing some energy through a variable drive to gain the efficiency benefits - if fixed duties and fixed speed starters are too rigid.
- ◆ **Labour costs;** Yes automation is 'an extra' but it is a once-off cost, not an on-going cost like having a trained man to manage an irrigation system. These days a small investment in simple robust electronics can let you measure, control and report as little or as much as you want.



- ◆ **Installation and project supervision;** No matter how well designed your system is, if it is not installed correctly it will be a headache. So we work with your local contractors and monitor their installation periodically so that we can say to you "Yes, it is installed and working as specified."
- ◆ **Fertilising;** Many fertilisers are now liquid or are soluble and as such can be injected into the irrigation flow. In a well designed system the distribution pattern is more evenly spread than by traditional broadcast methods. This means a uniform crop, less tractor time, less diesel and less labour.
- ◆ **Scheduling;** Bureau of Meteorology data gathered over the past 100 years is used to predict water usage and crop requirements in advance for budgeting purposes, and it is supplemented and calibrated locally with real time data from soil probes, meters and monitoring devices for full irrigation scheduling.

How can HydroPlan help?

Our Irrigineers have been helping people like you for 25 years now, worldwide. Come and have a talk with us. Let us be the specialist on your side of the table when the decisions need to be made as to what type of irrigation, what size pipe, what type of pump and which quotation to accept.

Poorly designed systems don't work at all, and end up in legal disputes. The cost of rectifying these systems can be similar to the original installed cost. So don't take that chance on your next irrigation investment. Let us as independent specialists develop your master plan and follow it through to success.

We are your "hired help" in this part of your farming business. Make your farm work for you, not the other way around.