Water Security Tech Tour - Friday 26th March 2021

10.30am — 3.15pm

Save water - Save $

Meeting at: Kondoric Windmill Yards
Woods Well Road (west end)

Woods Well

Registrations essential by Monday 22nd March:

Text: 0427 750 050 or

E: tstrugnell@coorong.sa.gov.au

Lunch & refreshments provided

WHAT YOU WILL SEE & HEAR?

- Visiting Three Lined Catchments - planning, building, lining & design alternatives
- Alpha Group water tech update; leak detection, tank water level sensors, flow meters, & more
- Solar Water Pumps Australia - will not burn out if the pump runs dry

Australian Government | National Landcare Program

LANDSCAPE SOUTH AUSTRALIA LIMESTONE COAST

This project is supported by the Limestone Coast Landscape Board, through funding from the Australian Government's National Landcare Program

Government of South Australia
Primary Industries and Regions SA

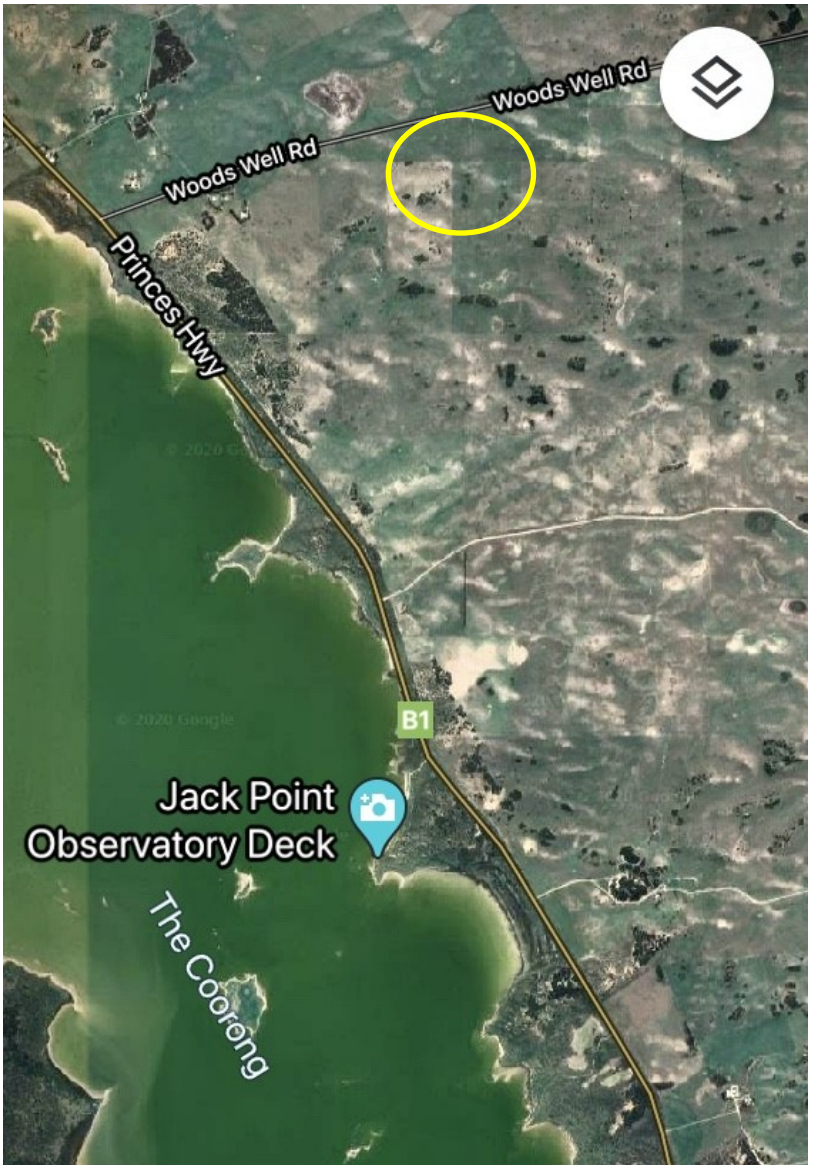
26th of March 2021 - 10.30am meeting at:

Kondoric Windmill Yards

Woods Well Road (west end)

Woods Well

Look for the Farm Walk signs



Water Security Technology Tour - Woods Well - Friday 26th March 2021

Stop	Item	Speaker	Organisation	Location	Time	Page n#
1	**ARRIVAL & WELCOME**	Tracey Strugnell	Coorong & Tatiara District Councils / CTLAP	Kondoric Windmill Yards, Woods Well Road (west end)	**10.30am** - *10.45am*	3
2	**Alpha Group Consulting –** water tech update; leak detection, tank level sensors, flow meters & more	TBA	Alpha Group Consulting	Kondoric Windmill Yards, Woods Well Road (west end)	**10.45am** - *11.30am*	4-7
3	**Cornish Pastoral Lined Catchment**	Rob Cornish Mark Scobie	Cornish Pastoral Coorong Lined Catchment Project	In from Kondoric Windmill Yards, Woods Well Road (west end)	**11.40am** - *12.15pm*	9-15
4	**Solar Water Pumps Australia**	TBA	Solar Water Pumps Australia	In from Kondoric Windmill Yards, Woods Well Road (west end)	**12.15pm** - *12.45pm*	-16
5	**Travel to Warreena Station Shearing Shed**	**BBQ LUNCH** *provided by Tintinara Lions Club & Display*		Warreena Station – Princes Highway, Woods Well	**1.00pm** - *1.30pm*	17-25
	Leak Free On Farm Pipelines Fact Sheet and Tax Incentives Fact Sheet					
6	**Warreena Station Lined Catchment**	Adam Merry Mark Scobie	Warreena Station Coorong Lined Catchment Project	Warreena Station – Princes Highway, Woods Well	**1.30pm** - *2.15pm*	9-15
7	**Travel to Woods Well Station Lined Catchment**	Andee Martin & Will Snook Mark Scobie	Woods Well Station Coorong Lined Catchment Project	Woods Well Road (west end)	**2.30pm** - *3.15pm*	9-15
			FARM WALK FINISH			

Alpha Group Tank Level Sensors

Leak Detection Technology **Shane Oster – Alpha Group**

Background

Leak detection is rapidly becoming a must have management tool for livestock producers in the Coorong/Tatiara area. The technology saw it's genesis in the early 2000's with a project instigated and funded by the Coorong Local Action Plan. The system was extremely effective at identifying water leaks that producers were not aware of, even if they were checking their meters.

This technology continues to be fine tuned, and has been primarily installed onto SA Water mains meters.

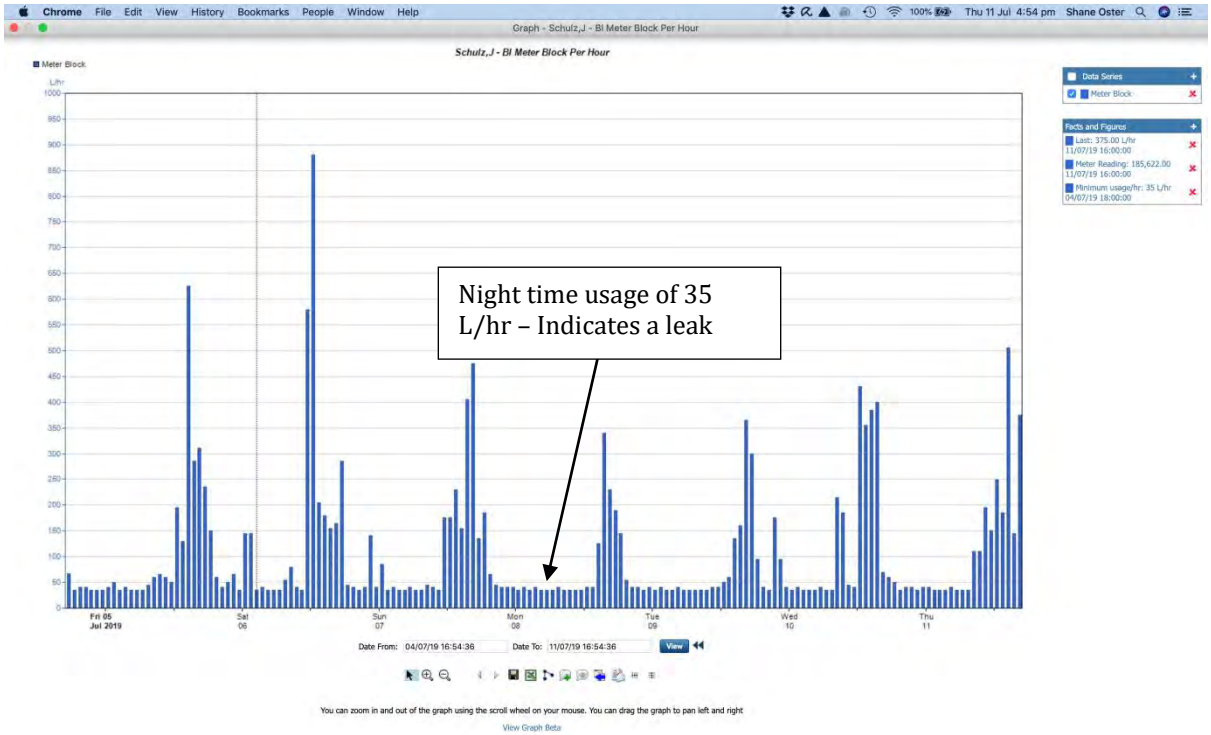
How it works

The challenge often comes in finding the leak after you have identified that you have one. Having a system which is essentially mobile with a flow meter that can also be shifted around to different sections of the pipeline network is one way of overcoming this issue. This will isolate the section of the pipeline where the leak might be occurring on.

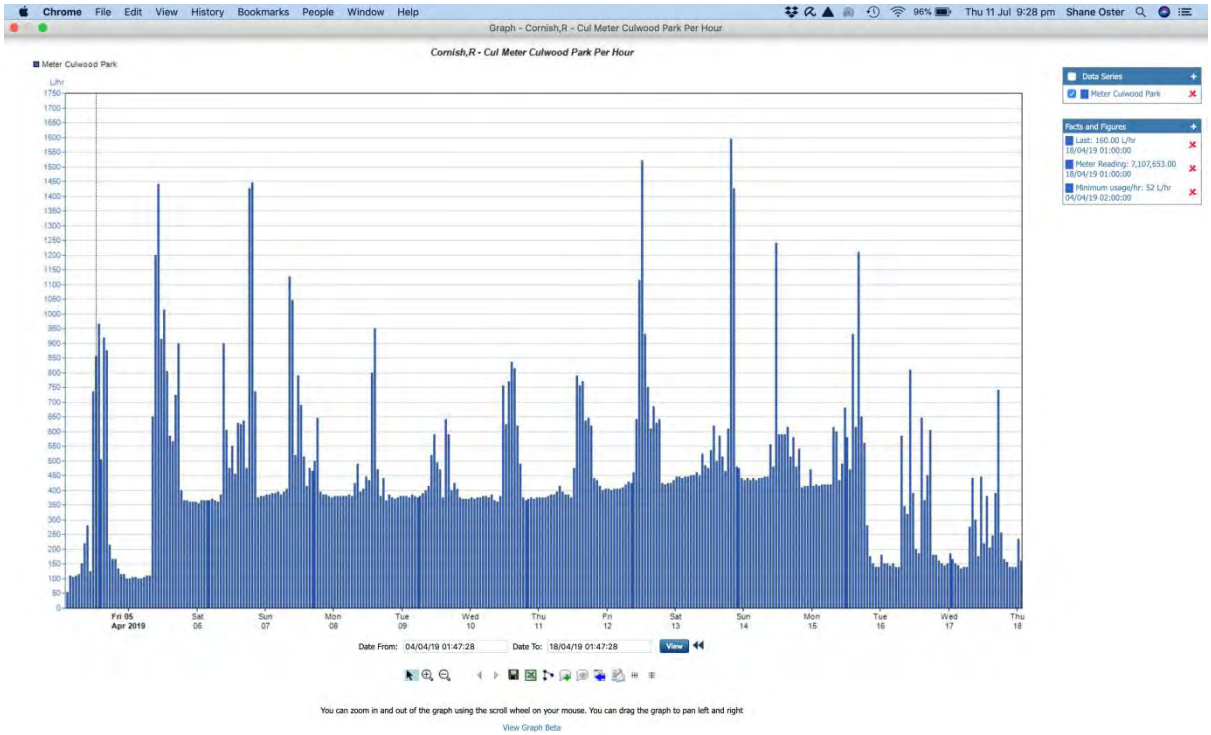
The technology works by receiving a "pulse" from the flow meter every time it registers a litre of water (the pulse rate varies depending on the type of meter). The telemetry unit will then record the "pulses" and will send the data off via a Next G connection at a scheduled interval (usually every 2 hours) to an ftp site. From there the data is processed to be put into a graphical format and alerts are sent via SMS & email if the pre-set tolerances are breeched. A typical Leak Detection unit is shown below. The telemetry unit which contains the Next G SIM card is inside the small grey box on the back of the solar panel.

The basis of the system lies in understanding what the water usage patterns are normally and identifying when they change. For example, from examining the data we know that stock typically won't drink between the hours of midnight and 6am. As such the water usage at this period should be zero litres/hour. If the minimum usage at this period is 200 L/hr we can quantify that there is a 200L/hr leak. Every morning clients will receive a text message informing them exactly how much water they have used over the previous 24 hours and what the minimum flow has been

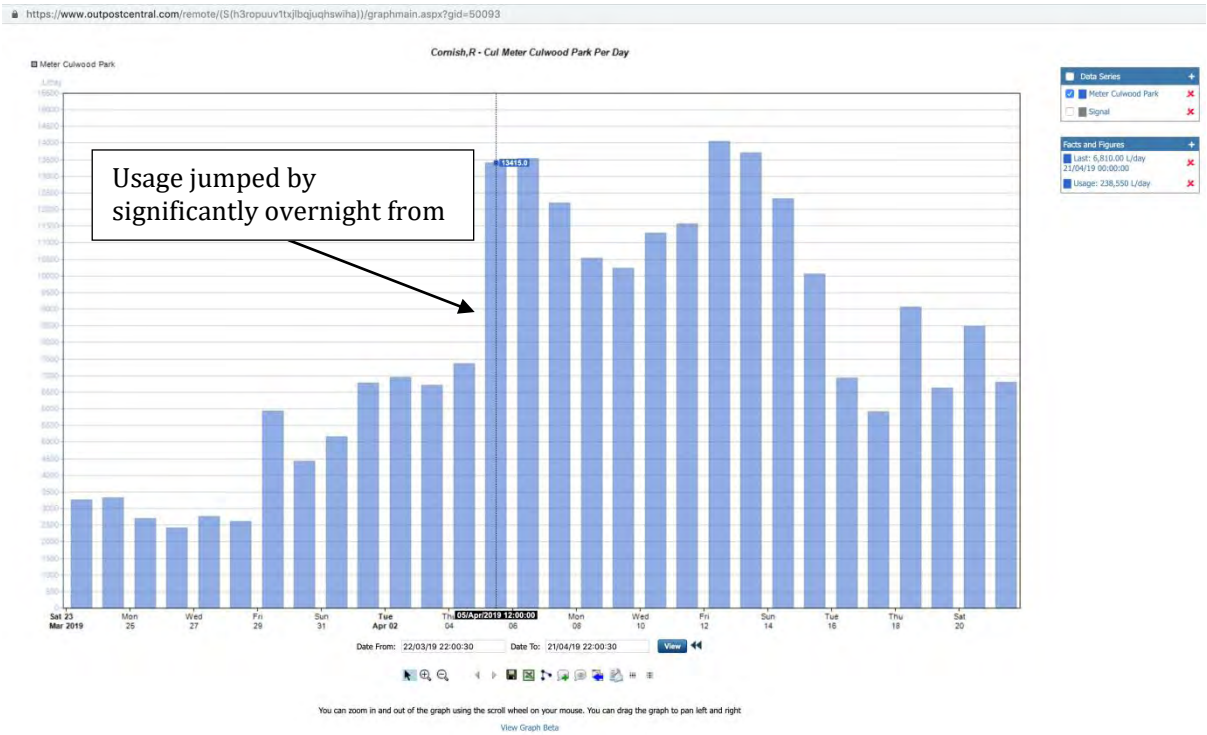
Below is an example of a “Normal” water usage graph with a minor 35 L/hr leak.



Below is an example of how major leaks often appear. Although it seems a lot, a leak of less than 100 L/hr is very hard to find. Commonly leaks like this will occur for a period of time before a split pipe really opens up. Below shows a leak event of 105 L/hr jump to 380 L/hr effectively overnight. Even at that usage rate is still took 10 days before the leak was able to be identified and repaired.



Alarms are also set on the system to alert for high usage events. The graph below illustrates how “normal” usage can double in a day with the advent of a leakage event.



The integration of technology such as leak detection units have benefits which reach across the whole business. At it’s most fundamental level is a tool for saving water but once implemented into a business it performs other functions such as water security, efficient labour utilisation and provides mental health benefits. Growers with diagnosed mental health issues have identified it as being a critical tool for them, ensuring that the stress of losing thousands of dollars or water stock losses doesn’t weigh on their minds when other pressures are keeping them down.

Coorong Tatiara
Sustainability, Agriculture & the Environment

Water Harvesting and Lined Catchments

This fact sheet covers the basic considerations & steps involved in constructing a lined catchment. Maintaining a reliable & sustainable farm water supply is a major concern for livestock producers today. Many farmers have invested in lined catchment areas across SA. A lined catchment is a poly lined catchment area that runs into a poly lined dam. A lined catchment will capture water in any rainfall or dew event, where as an earthen dam needs the soil profile to be fully wetted up for water to run off the catchment & into the dam.

The motivation for implementing a lined catchment area varies, but the most common reasons are;

- The cost of mains water.
- Low annual rainfall levels.
- Poor quality groundwater is not an option.
- Sandy soils are too porous to install earthen dams.
- Lined catchments produce high quality water suitable for use by all livestock, intensive agriculture, spraying, and domestic use.

Site selection and preparation

Some points to consider when selecting a site:

- A steep gradient is not required.
- A level area with a slight fall is ideal.
- Siting on elevated area, or the highest point in the landscape can negate water pumping costs.
- If this is not possible the location of storage tanks need to be considered.
- The catchment can be placed on land that is deemed otherwise unproductive.
- Can drains or roads run into the catchment area?

Poly Liners

There are a range of different quality liners including;

- High Density Polyethylene - HDPE
- Linear Low Density Polyethylene - LLDPE
- Polypropylene -PP and Poly Vinyl Chloride—PVC

High Density Polyethylene (HDPE) geomembrane, is a polyethylene thermoplastic. HDPE provide excellent durability and resistant properties due to its large strength to density ratio. This is the most common liner used in lined catchments.

Linear low-density polyethylene (LLDPE) geomembranes are very flexible, tear resistant and durable. LLDPE has a higher tensile break elongation than HDPE, however HDPE has an excellent ultraviolet (UV) and chemical resistance

What is the difference between HDPE and LLDPE Plastic Sheets?

- Although both materials are polyethylene, they do have different properties.
- LDPE is softer, more flexible and melts at a lower temperature than HDPE.
- HDPE is harder, has a higher chemical resistance and can withstand higher temperatures.

Poly liners come in a range of thicknesses, and qualities

Planning and Regulation

Introduction

Regulatory requirements have been established primarily in response to issues that have arisen over the years that have created either environmental damage, over-use of resources, infrastructure damage or even conflict between land users. Often these issues were not foreseen, and as such the regulatory frameworks have been put in place to prevent or limit any such adverse impacts occurring. In regard to water harvesting the following may need to be considered as part of the overall plan (noting that this is based on livestock water used only).

Dams

Dams that do not meet certain exemption criteria will be required to be assessed as development. Depending upon the location, this might necessitate referral to the Landscapes SA Boards and or the Department for Environment, Water and Natural Resources. Impact on water resources and ecology are important considerations.

Dams are exempt from development approval, except:

- Where a levee or mound with a finished height greater than 3 metres above the natural ground is to be formed; or
- Where a retaining wall which retains a difference in ground levels exceeding 1 metre is to be used or formed; or
- Where the dam is in the Flood Zone or Flood Plain delineated by Council's Development Plan, or in any other zone or area shown as being subject to flooding or inundation in Council's Development Plan; or
- Where the dam is to have a capacity exceeding 5 megalitres.

For more information please visit :
http://www.coorong.sa.gov.au/waterplanningconsiderations
http://www.coorong.sa.gov.au/waterqualityandlivestockhealth
For a range of information please contact Natural Resources SA Murray Darling Basin or Natural Resources South East to check to for any 'Water Affecting Activities' regulations.

- Mount Barker P.08 8391 7500
- Mount Gambier P.08 8735 1177

Other Considerations

Shandying Water

Stock do not need mains or rain quality water to thrive so there is the potential to mix water from the lined catchment and bore water.
This can significantly boost the water output from the lined catchment or reduce the area of the catchment or the size of the dam. The water produced just needs to be fit for purpose.

Water Quality

Stock grazing green feed can tolerate higher salt concentrations than the same stock on dry feed. Stock grazing saltbush or salty feeds are less tolerant to saline water than stock grazing other types of pasture. Pregnant, lactating and young stock have a lower salt tolerance than older dry stock.

Algae

Build up of algae in dams can not only block outlets and pipes but also taint the water. Several species of algae are toxic to stock and cause deaths from poisoning. Algae can be controlled with several chemicals, including copper sulphate, calcium hypochlorite and fer-

Estimation of potential water harvested

The figures below can be used as a guide in determining your total stock water requirements.
It should be noted however that the following are average figures and variations will occur depending on weather conditions, the feed available, and the breed of animal.

Area		*Rainfall*		*Volume captured*	Value of same amount of SA Water mains supply *($3.413 kl - March 2020)*	Annual no of dry cows watered *(13,500 l/head)*	Annual no of cows & calves watered *20,000 l/head)*	Annual no of dry sheep watered *(2,070 l/head)*	Annual no of lactating ewes watered *(2,880 l/head)*
1 sq m	X	1mm rain	=	1 litre					
0.5ha	X	450mm rain	=	2,250,000 litres (2.25 megs)	$7,697	166	112	1,086	780
1 ha	X	450mm rain	=	4,500,000 litres (4.5 megs)	$15,358	333	225	2,173	1,560
2 ha	X	450mm rain	=	9,000,000 (9 megs)	$30,717	666	450	4,347	3,125
3 ha	X	450mm rain	=	13,500,000 (13.megs)	$46,075	1,000	675	6,520	4,685

CASE STUDY ONE

Owner	*'Orlunda Downs'*	**M & L Scobie**
Property size		**2,690ha**
Location		**Policemans Point**
Rainfall		**500mm**
Enterprises		**1,100 Cattle and 800 Sheep**
Annual water bill pre dam		**$40,000**
Annual water bill post dam		**< $1,000**
Catchment area		**2.3ha**
Catchment liner	Polydam	**1.5mm HDPE**
Dam Capacity		**11 mega litres**
Dam liner	Polydam	**1.5mm HDPE**
Shandying water		**yes**
Year established		**2016**
Cost		**$250,000**

Dam liner cost $40,000 - Catchment liner cost $120,000 (Includes freight and handling)

Benefits

Mark has now switched off his water meter but has left it connected to his farm watering system as "insurance" in case of emergency.

Mark turning off his SA Water meter

Commencing the instillation of the liner and the anchor trenches are clearly visible in the foreground.

Site selection was important and there is plenty of room to extend the catchment at a later date if necessary

Excess rock was used around troughs and on roads The site must be rock free or liner damage may occur

Poly liner initially weighed down with sandbags

The option to shandy bore water to increase the capacity of the lined catchment remains. Water only needs to be fit for purpose and stock don't need pure rainwater to

Project Steps

- Business case.
- Site selection.
- Earthworks carried out to build the dam and shape the catchment area.
- The dam and catchment surface to be lined must be smooth and free of rocks, sharp stones, sticks, roots, sharp objects, or other debris prior to laying liner.
- Ensure the catchment site is level to minimise water pooling and evaporation.
- Placement of liner in dam and on catchment.
- Liner cannot be laid when hot or windy.
- The liner must be laid loosely as it will tighten, and move when the temperature fluctuates.
- Ensure the liner is stable, weighed down, and fully welded to stop poly liner from flapping.
- Welding of liner by contractors (if using purpose made poly liner).
- Fencing the site to prevent wildlife being trapped and damaging the liner.
- Setting up other water infrastructure as required

Project Components

In approximate order of costs

1. Poly Liner	6. Water Pumps *
2. Earthworks	7. Remote Monitoring Telemetry*
3. Catchment Fencing	8. Pump Shed*
4. Tanks *	9. Sand Bags to weigh down liner
5. Power *	10.Tyres to weigh down liner

**May not be required at all sites*

A ladder into the dam is a useful safety feature.

Site selection is very important and it is advisable to do a test dig with a backhoe so there are no nasty surprises during construction

The whole site must be free of rocks and other debris otherwise liner damage may occur

Concrete sump and outlet

The liner needs to be weighed down to prevent lifting in the wind

The site needs 1.8m high secure fencing

CASE STUDY TWO

'Gundooee'		**Nick Daniel**
Location		**Field**
Property size		**1,230 ha**
Rainfall		**450mm**
Enterprises		**Cattle**
Annual water bill		**$28,000**
Catchment area		**12,200sq m**
Dam area		**3,200 sq m**
Total area		**1.54ha**
Catchment liner	Fabtech	**1mm HDPE**
Dam Capacity		**5 mega litres**
Dam liner	Fabtech	**1.5mm HDPE**
Year established		**2015**

Challenges

Have had issues with algae, but it was easily treated with copper sulphate.

Benefits

SA Water meter now switched off.
It remains connected and could be switched on in case of emergency.
The only SA Water charge is the annual connection fee.

Cost

Poly Liner 12,200 sqm + dam 3,200 sqm	$76,300
Earthworks	$28,200
2 pumps & telemetry (SMS)	$15,400
Tank and extra poly	$15,400
Pump shed	$250

Payback Period

Will capture 15,400 litres per millimetre rain, the lined catchment is working well
450mm rain will produce 6,930kl or 6.93 megs
This would equate to $23,000 for an equivalent amount of mains water at the current price (March 2020)

All joints double seem welded. The gap between the welds is pressure tested for any leaks

Completed dam with floating pump

Pump shed and storage tank

Dam evaporation losses

Evaporation losses from the dam will be between 1.5m and 2.0m and need to be factored into calculating catchment area.

Covers are expensive, and are in the range of $5 to $8 per sq m. The cheapest option to address losses may be to dig the dam deeper to compensate for the evaporation loss.

Floating Dam Covers - Benefits:

- Evaporation control
- Blocks sunlight preventing algae
- Protects water from bird droppings, pollens, air born and animal borne particulates
- Can acts as a catchment area, water is diverted to a drainage system and stored in the dam.

Catchment liners can save evaporation losses but are very expensive. It may be more cost effectives to dig the dam deeper or make the catchment larger to offset evaporation losses.

Factors to consider with dam covers:

- How stable will the cover/barrier be in high winds?
- How long will it last?
- Will it be stable when the dam is dry?
- Are there special requirements – at least one product requires 30cm or more of water in the dam at all times?
- Will it leach toxic substances into the water?
- How will it stand up to what is a corrosive environment – continual contact with water and air and some level of salinity; exposure to ultra-violet light that can degrade some plastics?
- Some products are easily and cheaply installed by the land owner, others require expensive installation by specialists.
- What warranty is there & is the company likely to be around in five years if you need to call on the warranty?
- Does the product need to cover only the water, or does it need to be large enough to allow for anchoring beyond the lip of your dam – making a big impact on the final price?
- Many of the products on the market are flammable.

Fencing the lined catchment is essential to prevent trapped wildlife and livestock damaging the liner or drowning.

Additional Resources

Water Harvesting and Lined Catchments
Coorong Tatiara Local Action Plan :
http://www.coorong.sa.gov.au/waterharvest

Planning information
http://www.coorong.sa.gov.au/waterplanningconsiderations

Water affecting activities regulations
Natural Resources SA Murray Darling Basin or Natural Resources South East

- Mount Barker P.08 8391 7500
- Mount Gambier P.08 8735 1177

Catchment and Dam Liners:
Fabtech: https://www.fabtech.com.au/
Tel: 1300 664 776 / 08 8347 3111

Poly Dam: https://polydam.com.au/
Mobile 0411 101 468

Other Fact Sheets in this series

http://www.coorong.sa.gov.au/watersecuritytech

Coorong Tatiara Local Action Plan
Tintinara Office

37 Becker Tce Tintinara
PO Box 399
Tailem Bend SA 5260
P: 1300 785277
F: (08)87 572 222

http://www.coorong.sa.gov.au/gotolap

'National Landcare Program: Smart Farms Program, an Australian Government initiative'.

The Coorong District Council Information Guide

Planning & Development

Requirements for Piping Water & Water Harvesting

Introduction

Regulatory requirements have been established primarily in response to issues that have arisen over the years that have created either environmental damage, over-use of resources, infrastructure damage or even conflict between land users.
Often these issues were not foreseen, and as such the regulatory frameworks have been put in place to prevent or limit any such adverse impacts occurring. In regards to piping water/water harvesting the following may need to be considered as part of the overall plan (noting that this is based on use as **stock water only**).

Dams

Dams that do not meet certain exemption criteria will be required to be assessed as development. Depending upon the location, this might necessitate referral to the NRM Board and/ or the Department for Environment, Water and Natural Resources. Impact on water resources and ecology are important considerations.

Dams are exempt from development approval, **except**:

- Where a levee or mound with a finished height greater than 3 metres above the natural ground is to be formed; *or*
- Where a retaining wall which retains a difference in ground levels exceeding 1 metre is to be used or formed; *or*
- Where the dam is in the Flood Zone or Flood Plain delineated by Council's Development Plan, or in any other zone or area shown as being subject to flooding or inundation in Council's Development Plan; *or*
- Where the dam is to have a capacity exceeding 5 megalitres.

Infrastructure for pumping water from River Murray system

Any new pumping infrastructure (including deposition of wastewater from desalination plants) in the River Murray Protection Area is classified as development. Impact on use and amenity of locality, and environmental impacts are to be assessed.

Laying pipeline in road reserve

Any alteration to a road or road reserve (including laying of infrastructure) requires the consent of the relevant Council. Impact on existing infrastructure, native vegetation, etc. is assessed.

Desalination Plants

Small desalination plants in themselves might not be classified as development (if taking water from a source outside the River Murray system); however deposition of wastewater containing flocculants might require assessment by the EPA. Depending upon the scale and siting of alternative energy sources, these might also be development.

Storage Tanks

Depending on the size, and possibly location, of water storage tanks, they may require development approval. Ensuring that the tank is structurally sound would be the primary concern.

Development Information Guides are intended to help applicants to submit applications which are complete, well prepared, and can be processed efficiently. The information provided is intended as a general guide only and applicants are encouraged to refer to The Coorong District Council's Development Plan and to seek advice from our staff if necessary.

95-101 Railway Terrace (PO Box 399) Tailem Bend SA 5260
www.coorong.sa.gov.au

T 1300 785 277 **F** 08 8572 3822 **E** council@coorong.sa.gov.au

SOLAR WATER PUMPS AUSTRALIA P/L

www.solarwaterpumps.com.au

Designer & Manufacturer of Solar Powered Water Pumping
Systems & Specialised Solar Products. Established 1989
Postal: Box 419 Kapunda SA 5373 Workshop: 9 Mellor Place Kapunda
PH: (08) 85 663876 FAX: (08) 85 663858
Email: office@solarwaterpumpsaustralia.com.au

SOLAR POWERED HARDI 500 PUMPS – from 2 to 15l/min to a head of 150 metres. Pumps up to 6000l/day.

- Diaphragm positive displacement pump
- Reliable suction up to 6 metres
- Can be run dry without damage
- Pressure switch fitted for operation automatic
- Single grease nipple, dry sump with drain
- Simple maintenance
- Polyurethane diaphragms & seals
- Cast iron construction
- Belt driven, using a triple size steel pulley on the motor which enables fine tuning of pump speed to maximise output
- Robust construction and extremely reliable for many years of hassle free pumping

SOLAR POWERED HARDI 600 PUMPS - from 10 to 40l/min to a head of 150 metres. Pumps up to 16,000l/7 hr day.

SOLAR POWERED 1200/1300 HARDI PUMPS - from 40 to 110l/min to a head of 150 metres. Biggest system built to date will push to 38km and pumping 20,000 litres per day. Can pump up to 60,000l/10hr day with our angled double array system.

Coorong Tatiara
Sustainability, Agriculture & the Environment

Best Practice to achieve a leak free service from on-farm pipelines & water reticulation systems

This fact sheet covers best practice considerations and steps involved in constructing farm water supply pipelines. Maintaining a reliable and sustainable farm water supply is a major concern for livestock producers today.

Background

The increasing mains water prices has driven some landholders to replace or upgrade old leaking poly pipe.

By careful planning and using best practice methods of laying poly pipe considerable savings can be made as well as substantially increasing the life of the pipe.

Selecting correct pipe size

To determine the best size/diameter of pipe to install for a specific water reticulation project, the whole of the proposed system must be evaluated first.

The purpose of the evaluation stage is to gather information on the physical conditions that will inform the best design of the system.

It is necessary for the 'Total Head' to be calculated which is the sum of three elements;

- Static Lift
- Static Height
- Friction Loss.

Static lift

In the case of using a pump to supply the water into the system, static Lift is the vertical distance of the suction pipe from the ground level at the pump site to the lowest water level in the bore, well, dam or creek. If the water supply is from a storage tank adjacent to the pump site, there is no Static Lift factor.

Similarly, where the water supply is from a reticulated pressurised mains supply, there is no static lift.

Static height

This is the maximum height to which the water has to flow, and is the vertical distance from the ground level at the water source to the highest point in the proposed delivery pipeline, eg a header tank. (When flowing downhill, water acquires a Static Height equal to the height of the fall.)

Friction loss

The same applies to pipes. If we double the quantity of water passing through a pipe, it must obviously travel at twice the speed. This then means a greatly increased friction factor, but doubling the speed of the flow doesn't mean the friction is doubled too. The increase in friction is almost 4 times.

Friction loss is the most important element in the determination of any reticulation system, because it is the only variable that can be changed. For example, friction loss can be reduced by an increase in the diameter of the delivery pipe.

Designing the system

Once all the information required to design your system has been gathered and evaluated, the next process is to use this information to select the correct pump (if required) and pipe diameter.

High ambient temperature can significantly reduce the rated pressure capability of polyethylene pipe.

Planning & Regulation for Roadsides

Introduction
Regulatory requirements have been established primarily in response to issues that have arisen over the years that have created either environmental damage, over-use of resources, infrastructure damage or even conflict between land users. Often these issues were not foreseen, and as such the regulatory frameworks have been put in place to prevent or limit any such adverse impacts occurring. In regards to piping water, the following may need to be considered as part of the overall plan (noting that this is based on use as stock water only).

Dial Before You Dig
The essential first step in any roadside excavation
Dial Before You Dig is a FREE national referral service designed to assist in preventing damage and disruption to Australia's vast infrastructure networks which provide essential services we use every day. Visit https://www.1100.com.au

Infrastructure for pumping water from River Murray system
Any new pumping infrastructure (including deposition of wastewater from desalination plants) in the River Murray Protection Area is classified as development. Impact on use and amenity of locality, and environmental impacts required to be assessed.

Laying pipeline on road reserve
Any alteration to a road or road reserve (including laying of infrastructure) requires the consent of the relevant Council. Impact on existing infrastructure, native vegetation etc. is assessed.

Authorisation to alter a public road
The following activities are considered to be making an alteration to a road pursuant to the Local Government Act 1999. It is an offence to undertake alterations to a road without a written Authorisation from the Council for any of the following works:

- Install Stormwater Pipe
- install Underground Pipe or Cable
- install Underground Electrical Service
- install Structure (e.g. pipes, wires, cables, fixtures, fittings or other objects)

Also
Is the Proposed Alteration

- Permanent
- Temporary (indicate period of time for which the authorisation is required):

Storage Tanks
Depending on the size, & possibly location, of water storage tanks, they may require development approval. Ensuring that the tank is structurally sound would be the primary concern.

Native Vegetation
A native vegetation clearance may be required if the pipeline goes through scrub or native vegetation on a road reserve.
Contact the Native Vegetation Council**:** (08) 8303 9777

Alteration to a road or road reserve requires permission from Council

Alteration to a road or road reserve requires permission from Council

Permission is required to drill under a road

A native vegetation clearance may be required

Factors to achieve a leak free service from poly pipe water reticulation systems, *by John Croser*

DESIGN

Double length rolls equates to less joins and less potential failures. Minimal number of joins in regard to fittings such as "one piece Tees" doing away with threads.

Use brass on brass fittings for the inlets to troughs to prevent damage by stock rubbing on them.

Dependent upon the minimum pressure in the line, use underwater full flow servo activated float valves for totally drip free dependable service life. No water loss due to wind gusts affecting the float valve. (see further information and photos of the underwater full flow servo float on page 5)

FREIGHT & HANDLING

Pallet forks can bruise the internal rings of pipe on a roll particularly double length rolls when used to lift and transfer the rolls of Pipe.

Pallet forks are NOT ideal as the upper edges which take the weight can bruise the inner rings on a roll of pipe. Although not visible to the naked eye, the bruising can lead to premature pipe failure.

At least one manufacturer and their transport distributor use a half circle attachment to the top of the forks to prevent damage during loading and unloading.

PE pipes stacked for transport must be evenly supported in order to prevent distortion. All bearing surfaces must be free from contact with sharp objects. Any projecting sections such as stub flanges must be supported to prevent damage.

Where coils are stacked vertically the stacks may need to be restrained in order to prevent the bottom section of the coil being flattened or distorted.

SAFETY

Safety aspects need to be addressed. In cold and wet weather PE pipes may become slippery and difficult to handle.

In hot weather the pipe surface may reach 70°C, when the ambient temperatures reach 40°C. Handling PE pipes at these temperatures requires gloves, or other protection, to prevent the possibility of skin burns.

Care should be taken to release and uncoiled coiled pipe in a controlled manner. Coils are under tension and the amount of energy stored can be significant, causing injury, damage or death if released in an uncontrolled manner. Coil ends should be restrained at all times and straps released sequentially, starting from the outer layers.

A sling is the easiest way to lift coils of poly pipe.

An old pressure vessel covering the pallet forks can prevent pipe damage

Pallet forks can bruise the pipe which can lead to failure. Ideally a half circle attachment to the forks or a lifting sling should be used when unloading or handling the coils of pipe.

PIPE LAYING & INSTALLING FITTINGS

Ideally poly pipe should be laid in a trench, then the pipe flushed with cold water to reduce its length, then back filled. But trenching is expensive compared to using a poly pipe layer which can do multiple tasks in one pass.

There are several manufacturers of poly pipe layers which take the joiners down the chute with the pipe. This concept permits the couplings to be installed at optimal conditions, (waist height and dirt free)

One of the manufacturers is exploring the concept of being able to flush the pipe with cold water before laying in order to have the pipe shrunk to operating length and to ensure that no debris is in the pipe

Water can be seen running out the pipe as it is being laid

The concept of flushing with cold water before laying in order to shrink the pipe to its normal operating temperature has great merit for the longevity and maintenance free operation of the pipeline.
During operating conditions such as hot summers and cold frosty winters the pipe expands and contracts according to the temperature. However, because the coupling diameters are several times larger than the pipe diameter they act as anchor blocks on the sections of the pipe-line.

Hence when the pipe is shrinking or expanding lengthwise because of the temperature it is restricted by the couplings [anchor blocks] to the area between the individual couplings. This creates stress, usually near to the couplings which is invariably where the pipe fails by splitting, causing leaks.

This can be demonstrated by cutting an existing pipe line at right angles to release the stress which creates a shrinkage gap of sometimes 50 mm.

USE BEST PRACTICE METHODODS WHEN INSTALLING PIPE FITTINGS

Choice of fittings is also a factor. One brand of fitting does not use an external nut to ensure a seal, hence the seal is free floating and seals by the internal water pressure in the pipeline.
Cleanliness of both pipe and fittings is of paramount importance.

CUTTING THE PIPE

Cut the ends of the pipe to be joined with pliers action cutters at right angle to length of pipe.
Check that there are not any internal burrs in the pipe, if so remove.

Poly Pipe Cutter—*Easy Cutting with ratchet design. Large handles make straight and clean cuts.*

CHAMFER THE PIPE ENDS

Chamfer the square cut ends with special tool to ensure that the internal seal of the coupling is not damaged when the pipe is inserted.

Bevelling Tools

Pipe bevelling tools are used to remove the sharp edges on the outside of small bore HDPE pipe, from 20 mm to 63 mm. The bevel tool operates like a pencil sharpener, and bevels the poly pipe so it is suitable for electro fusion welding.

USE BEST PRACTICE METHODODS WHEN INSTALLING PIPE FITTINGS

FULL FLOW SERVO ACTIVATED FLOAT VALVES

Dependent upon the minimum pressure in the line, use under water full flow servo activated float valves for totally drip free dependable service life. No water loss due to wind gusts affecting the float valve.
One brand can be easily exchanged in the paddock under mains pressure in the event of a malfunction. They couple/uncouple using a simple bayonet connection.

CHOOSING THE BEST FITTINGS

Choose good quality fittings. They may cost more but will save money by reducing leaks.
The fitting on the left has a better quality seal and the pipe extends well past the seal which helps prevent leaks through pipe shrinkage.

LUBRICATION

Lubricate the coupling seals & the chamfered pipe ends with glycerine or a non-reactive pipe joint lubricant.

Ensure that the coupling seals are not displaced or rolled out of their natural shape when inserting the pipe into the coupling.

The seals are potentially a weak link in the water reticulation system.

Get it Right the first time as it costs a lot of time to find and fix a small leak in a long pipeline.

Get it Right the first time as it costs a lot of time to find and fix a small leak in a long pipeline.

PIPELAYERS

New developments in pipe layer design and features include using nylon tapered rollers to efficiently guide the pipe with minimum resistance & a removable back carriage for access to the pipe while laying.

New developments in pipe reel design features adjustable arms for easy loading of pipe coils, hydraulic lift to adjust the height from the tractor seat, and an adjustable friction brake for smooth uncoiling of the pipe

OTHER WATER SAVING OPTIONS

Leak Detection Units

Water leaks can be as high as 20% to 40% of total usage.
Advantages of installing a leak detection unit include;

- Monitor & record flow from SA Water meters & domestic bores
- Rapid detection of major leaks
- Identify minor system leaks
- Daily water usage alerts via SMS & email
- View graphs online 24/7
- Simple to fit on existing water meters

More info:
Alpha Group - https://www.thealphagroup.com.au/
Tim Powell - http://www.integratedirrigation.com.au/

Tank Level Sensors

- Saves time checking tank levels
- Saves water loss from overflowing tanks
- Prevents the risk of tanks running dry

More info: https://www.thealphagroup.com.au/

Pressure Reducers

- Pressure reducers can significantly reduce leaks in pipelines and water infrastructure.
- Particularly useful with older class B poly pipe.

Pressure Gauges

- Helps identify loss of pressure through leaks or overflowing tanks.
- Cheap & easy to install.
- Useful to check if pressure gages are set correctly.
- Best to have gauge on a riser in a spot you regularly drive past (visible without getting out of the ute or off the bike}.

DIAL BEFORE YOU DIG
www.1100.com.au
The Essential First Step.

Additional Resources

On Farm Piping Projects
Coorong Tatiara Local Action Plan:
https://www.coorong.sa.gov.au/council-services/coorong-tatiara-local-action-plan/water-security/on-farm-piping-projects

Planning information
Coorong District Council 1300 785 277
(or your local Council)
https://www.coorong.sa.gov.au/council-services/coorong-tatiara-local-action-plan/water-security/planning-considerations

Dial before you dig
6A, 128 Fullarton Road
Norwood SA 5067 (08) 7231 1111

Native vegetation Council
https://www.environment.sa.gov.au/about-us/boards-and-committees/native-vegetation-council
(08) 8303 9777

Laying pipe on a road reserve
Coorong District Council 1300 785 277
(or your local Council)

Other Fact Sheets in this series
https://www.coorong.sa.gov.au/council-services/coorong-tatiara-local-action-plan/water-security/water-security-technology-project

Coorong Tatiara Local Action Plan

Tintinara Office

37 Becker Tce Tintinara
PO Box 399
Tailem Bend SA 5260
P: 1300785277

https://www.coorong.sa.gov.au/council-services/coorong-tatiara-local-action-plan/water-security

Australian Government | National Landcare Program

LANDSCAPE SOUTH AUSTRALIA LIMESTONE COAST

This project is supported by the Limestone Coast Landscape Board, through funding from the Australian Government's National Landcare Program

Coorong District Council

Coorong Tatiara

Sustainability, Agriculture & the Environment

Tatiara — the good country

Farm Water Infrastructure Tax Benefits

Use this document as a guide only
Tax legislation frequently change
The financial situation and structure of individual businesses varies

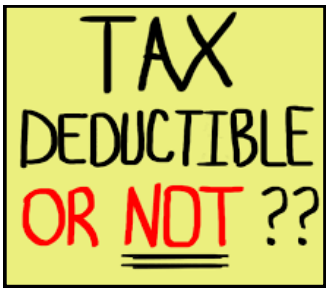
CONTENTS

- Instant asset write-off for eligible businesses
- On-farm Emergency Water Infrastructure Rebate Scheme
- ATO Guide to depreciating assets
  - Water facilities
  - Fencing assets
  - Fodder storage assets
- Capital Works Deductions
- The Drought Community Support Initiative (DCSI) Round 2
- Environmental Protection Activities
- Useful Contacts

Primary Producer Concessions

If you are a primary producer, special tax concessions may inform the amount you include in your assessable income each year. These concessions also affect when you have to pay your income tax, as you may be able to make two Pay As You Go instalments each year, instead of four.

Primary producers also have access to primary production averaging, which may allow you to pay a lower tax rate in years where you earn above-average income.



On-Farm Emergency Water Infrastructure Rebate Scheme

The South Australian Government in partnership with the Australian Government is providing a rebate of up to 50% (to a maximum of $50,000 - GST exclusive) to primary producers in drought affected areas for the costs associated with the purchase, installation and repairs to on-farm water infrastructure for livestock and permanent horticulture that:

- assists primary producers to be more productive
- assists in mitigating degradation of natural watering points
- addresses animal welfare needs
- assists primary producers to be more resilient for future droughts

PLEASE NOTE *PIRSA 15th Oct 2020*

The OnFarm Emergency Water Infrastructure Scheme has been oversubscribed, with demand exceeding the funding allocated for the period.

The strong demand demonstrates the commitment from primary producers to improve their water security, productivity and profitability during the drought.

Given this intense interest, the Marshall Liberal Government has invested additional funding to enable remaining applications to be supported. This program has been a partnership with the Commonwealth. The Marshall Liberal Government remains committed to the delivery of this program, and is currently working through the details with the Commonwealth Government regarding additional funding announced in the recent Federal Budget.

Once the finer details of the Commonwealth Government funding for the program are confirmed, the current assessments will be finalised and applicants will be notified via email of the outcomes of their individual submission and its assessment.

Currently, any further applications to the Scheme are closed.

Contact Details

Phone 1800 931 314

Web https://bit.ly/2GZkpF0

ATO—December 16th 2020

Instant asset write-off for eligible businesses

Eligible businesses can claim an immediate deduction for the business portion of the cost of an asset in the year the asset is first used or installed ready for use.

Instant asset write-off can be used for:

- multiple assets, if the cost of each individual asset is less than the relevant threshold
- new and second-hand assets.

If you are a small business, you will need to apply the simplified depreciation rules in order to claim the instant asset write-off. It cannot be used for assets that are excluded from those rules.

The instant asset write-off eligibility criteria and threshold have changed over time. You need to check your business's eligibility and apply the correct threshold amount depending on when the asset was purchased, first used or installed ready for use.

Recent changes

For assets first used or installed ready for use between 12 March 2020 until 30 June 2021, and purchased by 31 December 2020, the instant asset write-off:

- **threshold** amount for each asset is $150,000 (up from $30,000)
- **eligibility** extends to businesses with an aggregated turnover of less than $500 million (up from $50 million).

From 7.30pm AEDT on 6 October 2020 until 30 June 2022, temporary full expensing allows a deduction for:

- the business portion of the cost of new eligible depreciating assets for businesses with an aggregated turnover under $5 billion or for corporate tax entities that satisfy the alternative test
- the business portion of the cost of eligible second-hand assets for businesses with an aggregated turnover under $50 million

the balance of a small business pool at the end of each income year in this period for businesses with an aggregated turnover under $10 million.

ELIGIBILITY AND EXEMPTIONS

See the ATO Fact Sheet by clicking on the link below'

The **Government Fact sheet** link below provides an excellent explanation with many clear examples;

https://treasury.gov.au/sites/default/files/2020-03/Fact_sheet-Support_for_business_investment.pdf

ATO Guide to depreciating assets 2020 *(ATO May2020)*

Water Facilities

A water facility includes plant or a structural improvement that is primarily and principally for the purpose of conserving or conveying water. It also includes an alteration, addition or extension to that plant or structural improvement. Examples of water facilities are dams, tanks, tank stands, bores, wells, irrigation channels, pipes, pumps, water towers and windmills. The meaning of water facility has been extended to include certain other expenditure incurred on or after 1 July 2004:

- A repair of a capital nature to plant or a structural improvement that is primarily and principally for the purpose of conserving or conveying water (for example, if you purchase a pump that needs substantial work done to it before it can be used in your business, the cost of repairing the pump may be treated as a water facility)
- A structural improvement, or an alteration, addition or extension to a structural improvement, that is reasonably incidental to conserving or conveying water,
- A repair of a capital nature to a structural improvement that is reasonably incidental to conserving or conveying water.

You can fully deduct capital expenditure on a water facility if you incurred the expenditure at or after 7.30pm (AEST) on 12 May 2015. You fully deduct the expenditure in the income year in which you incurred it. The total deduction cannot be more than the amount of the capital expenditure. If you incurred the expenditure before this time, the previous uniform capital allowance (UCA) continue to apply.

For more information:
https://www.ato.gov.au/Forms/Guide-to-depreciating-assets-2020/

Fencing Assets

A fencing asset is an asset or structural improvement that is a fence, or a repair of a capital nature, or an alteration, addition or extension, to a fence. The capital expenditure you incur on the construction, manufacture, installation or acquisition of the fencing asset must have been incurred primarily and principally in a primary production business that you conduct on land in Australia. You may claim the deduction even if you are only a lessee of the land.

You can fully deduct capital expenditure on a fencing asset if you incurred the expenditure at or after 7.30pm (AEST) on 12 May 2015. You fully deduct the expenditure in the income year in which you incurred it. The total deduction cannot be more than the amount of the capital expenditure.

Fodder Storage Assets

A fodder storage asset is an asset that is primarily and principally for the purpose of storing fodder. It is also a structural improvement, or a repair of a capital nature, or an alteration, addition or extension, to an asset or a structural improvement, that is primarily and principally for the purpose of storing fodder.

- Silos
- Liquid feed supplement storage tanks
- Bins for storing dried grain
- Hay sheds
- Grain storage sheds, and above-ground bunkers for silage.

The capital expenditure you incur on the construction, manufacture, installation or acquisition of the fodder storage asset must have been incurred primarily and principally for use in a primary production business that you conduct on land in Australia. You may claim the deduction even if you are only a lessee of the land.

Capital Works Deductions

Capital works used to produce income, including buildings and structural improvements, are written off over a longer period than other depreciating assets.
Note that the land itself can't be written off and its cost is not deductible.

The capital works deduction is available for:

- Buildings or extensions, alterations or improvements to a building
- Structural improvements such as sealed driveways, fences and retaining walls
- Earthworks for environmental protection, such as embankments.

More information can be found at:

https://www.ato.gov.au/business/depreciation-and-capital-expenses-and-allowances/capital-works-deductions/

The Drought Community Support Initiative (DCSI) Round 2

The Drought Community Support Initiative (DCSI) Round 2 is an Australian Government funded grant that provides financial assistance of up to $3000 to farmers, farm workers, or suppliers/contractors that have been impacted by the drought.

DCSI Round 2 is a second round of funding being provided by the Commonwealth Government under this initiative. In this round, there is $45,000,000 of funding to be distributed to eligible households, through payments of $3,000.

On 20 March 2020, the Australian Government announced $15,000,000 of funding to be allocated towards an additional 52 LGAs that are now eligible to receive DCSI Round 2 support. These LGAs will be able to access this funding via our online form as of the 23 March 2020.

Round 2 started on the 19 November 2019 and will continue until 30 April 2021 or until program funds have been exhausted.

More information can be found at:
https://www.vinnies.org.au/page/Find_Help/drought_assistance/

Drought Community Support Initiative 2B Brochure

Useful Contacts

- Your accountant
- Rural Financial Counselling Service (RFCS)
  - Murray-Mallee and Upper South East
  - Lynton Keen
  - Phone: 1800 836 211
  - Mobile: 0448 092 294
  - Email: l.keen@ruralbusinesssupport.org.au

  - South East and Coorong
  - Lachlan Hood
  - Phone: 1800 836 211
  - Mobile: 0439 286 550
  - Email: l.hood@ruralbusinesssupport.org.au
- PIRSA Drought Support
https://pir.sa.gov.au/grants_and_assistance/drought_support

Other Fact Sheets in this series

- Water Harvesting and Lined catchments
- Farm Water Supply Pipelines
- Desalination for Livestock Water Supplies

These can be accessed at https://www.coorong.sa.gov.au/council-services/coorong-tatiara-local-action-plan/water-security

Grants and Financial Incentives updates

These may be available from time to time to assist with projects.
In time of drought, tax and financial incentives may be offered as part of Government drought assistance packages.
The Coorong Tatiara Local Action Plan will promote these in our e newsletter.

To subscribe to our newsletter please email tstrugnell@coorong.sa.gov.au

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