Water Saving Irrigation Offer for Australian Schools

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1. Irrigation & Water Technologies

Irrigation & Water Technologies (IWT) is an Australian company with more than 14 years experience manufacturing unique patented water saving sub-surface irrigation products for the global market place.

The intelligent IWT technology, **KISSS**, is incorporated into IWT products providing sustainable and ecologically responsible irrigation solutions that save money and the earth's resources. IWT KISSS-based solutions are also the safest way to irrigate using recycled water.

2. Offer to Australian Schools

To assist schools to take advantage of the current round of Government Infrastructure funding IWT has been able to make a standard offer for schools all over Australia.

The supply and installation of a complete KISSS sub-surface irrigation system will typically cost $\$9.50/m^2$ for a football field-sized irrigated area to be supplied and installed.

- A small playground area of 50m by 50m ($2,500m^2$) will cost approximately $25,000 plus GST
- A typical soccer field of $6,000m^2$ will cost approximately $57,000 plus GST
- A typical AFL field of $14,000m^2$ will cost approximately $133,000 plus GST

Smaller areas may cost more than $\$9.50/m^2$ - dependent upon site conditions.

As a bonus for schools taking up this offer where the area to be irrigated is at least $6,000m^2$, IWT has included the following at no additional charge:

- Design of the irrigation system.
- The provision of a Remote Soil Moisture monitoring system including first 12 months' data communication costs.
- An IWT soil test report to determine the capillary flow characteristics of the school's soil.
- The provision of a KISSS Education Program that enables students to be involved in the KISSS project – to understand the science behind the system and how it works with a further project to actively monitor water consumption with the soil moisture monitoring data and correlate this with local climatic conditions, surface evaporation rates and so on.

The installation of the KISSS system includes a controller, solenoids, filtration equipment, irrigation pipe and the KISSS product and fittings. It does not include any water pumping equipment required.

This offer assumes water and electricity supply is available adjacent to the area to be irrigated. Water pressure of 150 to 200kPA and flow rate of 2 litres per second are required. Additional information on water supply requirements will be provided on enquiry.

This offer also assumes no rock is present in the area to be irrigated. Exact costs will be confirmed following analysis of the IWT soil test report.

3. KISSS Sub-surface Irrigation Technology

KISSS has been refined through more than ten years of dedicated research and development in partnership with the Commonwealth Science and Industrial Research Organisation (CSIRO), the University of Western Sydney (UWS), the University of Queensland (UQ) and Charles Sturt University (CSU).

KISSS sub-surface irrigation technology precisely controls root zone conditions. This "smart" technology moves water upwards and outwards to the root zone at the soil's natural absorption rate. When saturation occurs, KISSS directs water to dry soil, creating a uniform wetting pattern. For the first time with any irrigation system, water application rates can be matched to the capillary absorption properties of the soil.

KISSS can also safely and efficiently disperse **recycled water**. The sub-surface delivery means both grey water and sewage effluent can be used - safely.

Benefits of KISSS technology include:

- Water savings of up to 60% versus conventional irrigation
- Delivers water directly to the root zone
- Eliminates evaporation and surface run-off
- Reduces water losses caused by deep drainage
- Increases fertiliser efficiency
- Safe, effective and efficient use of **recycled water**
- Reduces weed propagation
- Reduces the vandalism and damage sometimes associated other irrigation systems
- Allows irrigation to occur while the surface is in use

The difference between KISSS and conventional sub-surface irrigation

Conventional sub-surface drip irrigation (SDI) systems rely on individual emitters to discharge water and must be run until the driest region of soil is saturated. In contrast, KISSS's geo-textile layer targets the root zone and distributes water uniformly, reducing the need to over water.

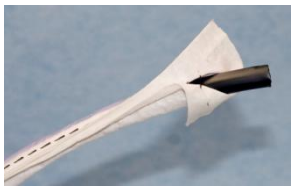
Unlike traditional sub-surface drip irrigation KISSS has:

- No run off
- Less evaporation
- No deep drainage
- Reduced tunneling

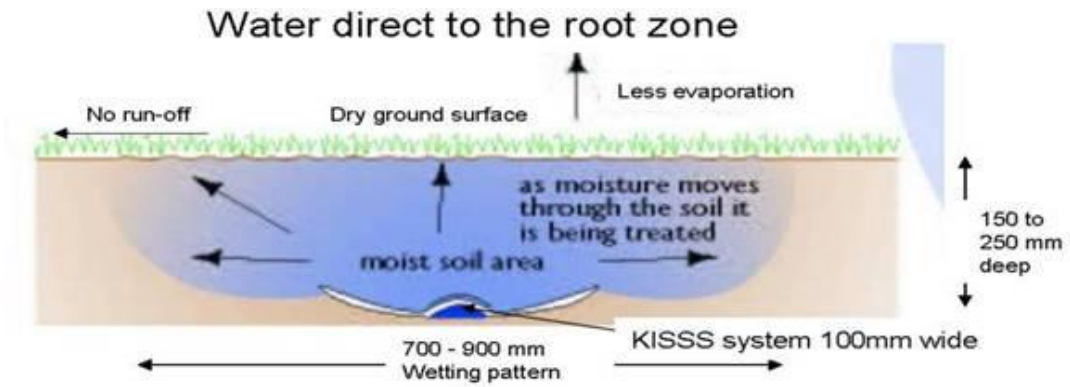
4. How KISSS Works

KISSS FLAT

KISSS WRAP



The diagram below shows how KISSS is positioned in the soil and the characteristic wetting pattern that results delivering water right into the root zone without wetting the surface.



Water Sources

KISSS is suitable for use with town/drinking water, rainwater tanks, recycled black water, storm water and bore water.

It should be noted that the system may require a pump to deliver water pressure of 150 to 200kPa and a flow rate of 2 litres/second.

5. Current KISSS References:

Quakers Hill Park–BlacktownCouncil

Rugby Field at Bungendore

The KISSS system at Bungendore Rugby field (see picture above) is using an average of 11 litres/m2/week over summer. Note the vigorous turf growth. This field has not been top-dressed or fertilised since the KISSS installation. Typically a field like Bungendore would normally use 30 litres/m2/week in summer, using sprinklers for a similar quality of turf cover. The KISSS system is designed to be supplied with recycled water from a new treatment plant by Palerang Council.

Also note that the Pacific Hill Christian School, Dural has been averaging just 8 litres/m2/week for the year and 12 litres/m2/week during summer on its KISSS-

irrigated sports field. Typically, for Sydney fields, an average of 25litres/m2/week would be expected using sprinklers for a similar quality turf.

CurransHill – CamdenCouncil – Using Recycled Water

The photos below show Jack Nash reserve at Currans Hill, in Camden Council's area. Camden has recently installed its 5th KISSS sporting field.

KISSS was launched in mid 2005. Since then, KISSS has been installed in sport fields, play grounds, parks and gardens by the following customers:

Schools

- Airey's Inlet Primary School (Vic)
- Bentleigh Secondary College (Vic)
- Bungendore Public School (NSW)
- Creek Street College, Bendigo (Vic)
- Christian Brothers School, Riverstone (NSW)
- Canberra Grammar School
- East Kurrajong Primary School (NSW)
- Eatons Hill Public School (Qld) (Recycled water)
- Flinders View Primary, Port Augusta (SA)
- Freeman High School (NSW)
- Freemans Reach Public School (NSW)
- Golden Square Primary School, Bendigo (Vic)
- Hawkesbury High School (NSW)
- Mt Waverley Primary School (Vic)
- Mt Whitestone (Qld)
- Norwest Christian College (NSW)
- Pacific Hills Christian School, Dural (NSW)
- Reeds Flat Primary School (NSW)
- River City Christian School, Echuca (Vic)
- Specimen Hill Primary School (Vic)
- Sutton Primary School (NSW) (Recycled Water)
- St Liborius School (Vic)
- Wandoan State School (Qld)

Councils

- Adelaide City Council (SA)
- Blacktown City Council (NSW)
- Camden City Council (NSW) *(recycled water)*
- Campbelltown City Council (SA)
- Campbelltown City Council (NSW) *(recycled water)*
- Canterbury City Council (NSW)
- City of Sydney (NSW)
- City of Geelong (Vic)
- City of Joondalup (WA)
- City of Tamworth (NSW)
- Gosford City Council (NSW)
- Goulburn City Council (NSW)
- Hornsby City Council (NSW)
- Lachlan Shire Council (NSW)
- Long Reach Council (Qld)
- Muswellbrook Shire Council (NSW)
- Narrabri Shire Council (NSW)
- Palerang Council (NSW) *(recycled water)*
- Playford City Council (SA)
- Port Pirie Council (SA)
- Surf Coast Shire (Vic)
- Wyndham Shire (Vic)

Other interesting customers include:

- Parliament House Canberra
- Governor General's Residence
- Sydney Harbour Foreshore Authority
- St Kilda Foreshore
- and many more

6. Installation

Installation of the KISSS system is typically completed using a specially designed plough/ripper implement that is attached to a conventional tractor.

Typically 10,000m can be ploughed into the ground in a day with another several days allowed for trenching of supply mains, connector installation, filter system etc.

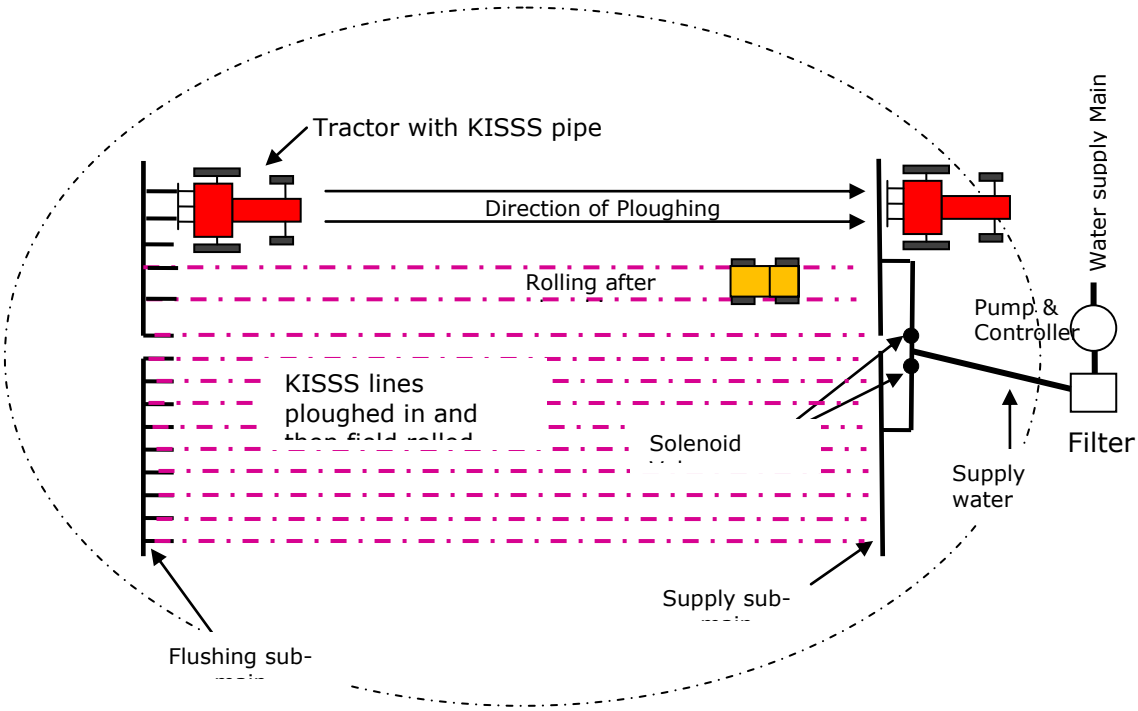


Figure 1 – Example of a possible Sport Field installation

Once ripped into the ground it is recommended that a 2 ton vibratory roller be used to flatten the ground so that it is immediately useable by the students.

7. Referees

KISSS referees include:

- Pacific Hills Christian School, Dural NSW. Installed in early 2000. KISSS with no root inhibitor at 900mm spacing. Recently ordered KISSS for their new sporting field.
- Eaton's Hill Public School Queensland. Installation using low grade recycled water supplied from Pine Water.
- Palerang Shire Council – Bungendore Oval. Installed approx 4 years ago. 800mm spacing. Second stage installed in late 2008.
- River City Christian School, Echuca. Installed 2008.
- Toowong Shire, Tallangatta Oval. Installed 2008.
- WET Consulting, Graham Dodds. Experience in specifying and designing KISSS over many years and to Councils like Broken Hill, Camden, Sydney Olympic Authority.

Referee contact details can be supplied on request.

8. Further Information

For further information:
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