

Specialists in Community Discharges, Land Treatment and Nutrient Management



# **Irrigation and Water Resource Management**

#### The right amount at the right time!

Lowe Environmental Impact (LEI) are specialists at providing irrigation and water management advice from the farm scale to large size community schemes.

Irrigation requirements to deliver cost effective plant growth is the balance between; water supply reliability, climate demands, soils and scheme capacity costs. Water sources all have different levels of reliability and capacity, therefore matching supply reliability, storage capacity and plant seasonal requirements is the key to an effective system.

Our in-depth knowledge of irrigation and the environmental effects, allows LEI to support your needs from concept development, funding application assistance, resource consenting, system requirements, engineering management, nutrient loss assessments and on-farm environmental plan preparation and implementation. We look for opportunities to reduce cost and increase profitability; this includes power generation assessments, gravity supplies and pump system networks.

We can take any project from the initial investigation stage, deal with all local and regional council resource consent requirements, and provide tailored solutions to meet the requirements of any project.

#### LEI EXPERTISE AND SERVICES

LEI is a specialist science and environmental engineering company that can procure your resource consents, manage the design and detail the operation of your irrigation scheme. We provide a well-rounded and easy to deal with organisation for all your irrigation needs.

We look to do the right work at the right time to manage expenditure, risks and timelines.

Specific irrigation expertise provided includes:

- Water supply options and resource assessments
- > Water demands on and off-farm
- Environmental risks and opportunities
- > Consenting and expert evidence
- > Nutrient management modelling
- > Farm plan development and audit
- Strategic development planning and risk management

- > Funding assistance applications
- Scheme option identification and configuration
- Hydro power generation assessments and business case development
- Project management
- Community consultation and open day
- Project tendering and contract negotiation

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Environmental

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#### WATER REQUIREMENTS

Developing irrigation whether at the farm scale or a large community scheme it all starts at paddock level assessing the necessary water requirements. Irrigation demand is interactive mixture of the climate, crop seasonal water demands, soil properties and water supply reliability. Large optimisation savings can be made by critically looking at how irrigation fits into the farming system in combination with other factors which drive profitability and restrict crop growth, be they nutrient levels, sunshine hours or rainfall. A key question stands, is water the only limiting factor in the system and is it economically sensible to eliminate moisture stress 100% of the time?

From the paddock water requirements farm and scheme water requirements can be evaluated. For schemes as the number of connection to the network increase there are opportunities to consider diversity of demands and reducing network capacities or expansion of the irrigation supply area.

#### NUTRIENT MANAGEMENT

Nutrients leaching losses can in some places be the limiting factor to development. For any new development and intensification of land-use with irrigation there is likely to be additional nutrients to be managed. Nutrient leaching by drainage to groundwater can be exacerbated with irrigation if application depth, timing and management actions are not correct. It is important to have a good understanding of the nutrient management and regional plan requirements relating to water quality for your development.

Water quality mitigation measures on farm and at a catchment level can help enabling development to occur.

### **REGULATORY REQUIREMENTS**

With any irrigation consent an assessment of the effects on the environment and other users is required. The effects and benefits from the taking and using of the water need to considered and balanced. There is an increased focus from Regional Councils on maintaining and improving water quality. The measures of water quality are also changing from the concentration of Nitrogen Phosphorus and to include biological components such as the number and type plants and insects/invertebrates, algae levels and fine sediments. The detail and depth of assessment is dictated by the scale and significance of the activity proposed.

### SCHEME DEVELOPMENT

Knowing there is demand for water is key. The development of a community irrigation scheme can be a complex and long process. Early information of scheme feasibility and robust understanding of what water can mean to increase farm productivity is essential for a scheme to maintain development momentum and build demand.

The coordination of communication, engineering, consenting, land access and finance is needed for schemes. Often the engineering dominates, this is a trap, as all aspects of the scheme need to progressed in unison for there to be success. A staged and deliberate development plan will allow progress to be made while managing risk and expenditure.

Contact us to scope what is required and provide you with a proposal for your project



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## Clients and Relationships

**Operation and Management** 

Management Plans. Monitoring Plans. Environmental Monitoring

## Community Discharges

Wastewater Sludge and Biosolids Stormwater Contaminated Land

#### Land Treatment

Industrial and Municipal Wastewater Sludge and Biosolids Stormwater Onsite Wastewater Contaminated Land

#### Ag Science and Engineering Nutrient Loss Modelling Effluent Discharges Soil Quality Irrigation

Project Management

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Consenting