Effective Farming to Improve Freshwater Quality

November 2025 Two-Day ENVIROKNOWLEDGE® Training For

Field, Advisory, Science, Planning, Consents, Compliance and Consultancy Professionals

By

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ENVIROKNOWLEDGE®

HIGH QUALITY RMA & ENVIRONMENTAL KNOWLEDGE TRANSFER

Understanding the Science of Farming Impacts on Freshwater Quality and Effective Mitigation Measures to Make a Difference

Why is this training crucial?

In the past two decades there has been substantial investment by regional councils, central government and the farming industries on mitigation measures to abate and improve declining water quality. Regional councils have also been considering major changes to the existing land & water plans to prepare for the pending freshwater planning process. In the meantime, councils continue with the catchment focus groups and farm advisory to improve catchment water quality.

Regardless of whether for planning, scientific advice or farm advisory purpose, difficult questions continue to challenge regional councils, scientists and farmers alike such as:

- **Would reducing stocking rate reduce nitrate leaching?**
- **Would reducing fertiliser-N use rate reduce nitrate leaching despite no direct leaching?**
- **Is profitable dairying possible in polluted or sensitive catchments?**
- **Can increased nitrate levels in drinking water cause bowl cancer?**
- **How to mitigate heavily polluted catchments with nitrate effectively?**

The workshop contents have been evidence based and mostly synthesised from our robust New Zealand agricultural science research as such are realistic and technically defensible.

Who can benefit?

- **Regional Council -Catchment Management, Science, Planning, Consents, and Compliance Staff**
- **To be Certifiers and Auditors when new farm plan regulations are in force.**
- **Consultants (both technical and planning)**
- **Farmers with scientific interest**
- **Soil and water scientists**
- **RMA Technical Hearing Commissioners and MfE, PCE, MPI and EPA policy and technical staff**

Topics not to be missed

- **Farm water and land management in the legal context of the RMA, NPS-FM (2020), regional planning, consents process and compliance**
- **The science of N & P processes in *soil, water and farm effluent* on farm – information provided is well-researched, original and authoritative and not found in other courses, textbooks and workshops**
- **The science and effectiveness of existing nutrient leaching/runoff mitigation options**
- **The science and mitigation of non-nutrient farm contaminants**
- **Technical assessment of limitations and strengths of Overseer**
- **Is it practically possible to reduce nitrate leaching and P runoff from intensively farmed catchments without reducing profitability?**

About ENVIROKNOWLEDGE®: An independent high quality NZ consultancy which specialises in training, research and advisory in RMA implementation (effective consents process and consents monitoring), consent process, compliance monitoring, nitrogen in the environment, wastewater treatment technology and farm environment management to improve environmental quality.

About the workshop provider: Selva Selvarajah (PhD in Soil Science, Lincoln University) has 21 years of regional council experience (13 years as Director Resource Management). He is a hands-on RMA practitioner with sound scientific and legislative knowledge in soil, water and wastewater management and has written >100 reports, newspaper articles and publications (visit www.enviroknowledge.co.nz for reports and publications). He has excellent presentation (6 keynote papers & presentations in NZ and overseas) and training (trained more than 450 local government, consultancy, industry and CRI professionals since 2015) skills. He was the first expert in New Zealand to model N loading for farm dairy effluent in 1994 (for Waikato Regional Council) before Overseer® was developed (https://www.researchgate.net/publication/269337448). His workshops are of high quality, well-researched, up-to-date and presented (e.g., "*Advanced Nitrogen in the Environment*", "*Effective Regional Council Consents Process*", "*Consents Monitoring under the RMA*" and "*Wastewater Management under the RMA*"). He holds Advanced Sustainable Nutrient Management Massey University and Making Good Decision Chair (Hearing Commissioner Chair) certificates.

Please register with your full name, position, name of your employer and location you wish to attend at sustain@enviroknowledge.co.nz. *Seats are limited to 15 per location*. You can request for any further information on the workshop using the above e-mail address or by calling on 03 4776111.

For details on onsite group training download Training and Services Compendium July 2025: www.enviroknowledge.co.nz/assets/Uploads/Workshops/ENVIROKNOWLEDGE-Training-and-Services-Compendium-for-ALL-Clients-July-2025.pdf

[1]Workshop fee/person: **$1475 (excluding GST) (2018 price)**
Scheduled workshop time: **9 am to 5 pm daily**
Registration final date: **14 November 2025**

Venue	Workshop dates
Hamilton – Aaron Court Motor Lodge, 250 Ulster Street	17 & 18 November 2025
Dunedin – Alhambra Oaks Motor Lodge 558 Great King Street	25 & 26 November 2025

[1]Workshop fee Includes lunch, tea/coffee, hard copy colour 2025 edition manual (160 pages) with over 150 references, certificate and 3-month technical support on workshop contents and does not include the cost of accommodation. Discount:-5% for 3-5 and 10% for ≥6 (discount applies to attendees from the same employer).

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ENVIROKNOWLEDGE® November 2025 WORKSHOP FOR FIELD/LAND MANAGEMENT, SCIENCE, CONSENTS, COMPLIANCE, PLANNING and CONSULTANCY PROFESSIONALS

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        - Olsen-P thresholds for pasture production
    c. Factors affecting soil-P availability and pasture uptake
        - Key soil factor
        - Plant factors are ill-studied but critical
        - Fertiliser types
        - P-assimilation by microbes (or immobilisation)
        - P-mineralisation or P release from microbes
    d. P losses from soils
    e. Should we continue with Olsen-P as plant available-P indicator?
16. Nitrogen (N) in soil, water and wastewater
    a. Organic-N processes in soil, wastewater and water
    b. N assimilation or immobilisation by microbes
    c. How is nitrate formed in soil, water and wastewater?
    d. Why is nitrate decomposition (denitrification) important?
    e. How is N fixed biologically in soil and water?
    f. Does ammonia volatilisation matter?
    g. Can we continue to ignore atmospheric N deposition?
    h. Nitrate leaching
        - Controlling soil water drainage
        - Controlling N sources
    i. Plant uptake of N
        - Ammoniacal-N
        - Nitrate-N
    j. Do we know enough about algal blooms?
        - Cyanobacteria
        - N:P ratio and water quality
    k. Summary N processes
17. Impacts of non-nutrient farm contaminants on soil and water and water quality limits
    a. Biological oxygen demand (BOD)
    b. Suspended solids
    c. Faecal bacteria
    d. Heavy metals
18. Irrigation and water use
19. Sustainable farm effluent management
    a. Using farm effluent as a nutrient source
        - Farm dairy effluent (FDE)
        - Piggery effluent
    b. The science of farm dairy effluent treatment ponds
20. Understanding livestock productivity
    a. Breeding potentials and rearing
    b. Feed requirements
    c. Fertiliser-nitrogen management
    d. Stocking rate management
    e. Soil management
21. Use of Overseer as a nutrient model
    a. Understanding data and model terminology
    b. Overseer evolution
    c. Overseer coverage of land uses
    d. How does it work?
    e. Constraints
    f. How are nutrient losses calculated?
    g. Data management
    h. Overseer version 6.3.0 data outputs for a trial farm
    i. Overseer version 6.3.0 nitrate leaching and P runoff sensitivity assessment
    j. Overseer data output uncertainty assessment
    k. N leaching assessments derived from models have limited use in scientific research
    l. How to reduce input and output error in Overseer?
22. Is N leaching different in different land uses?

a. Dairy
b. Sheep
c. Cropping
d. Market gardening
e. Fruit growing
f. Viticulture
g. Land use effect on soil and water quality

23. Science and effectiveness of N mitigation measures
    a. Wetlands
        - Natural wetlands
        - Constructed wetlands
        - Floating wetlands
    b. Riparian margins
    c. Organic farming
    d. Regenerative agriculture
    e. Farm effluent storage and low-rate deferred irrigation
    f. Winter housing and feeding on pads (or restricted grazing)
    g. Denitrification walls and woodchip beds
    h. Nitrification inhibitor DCD
    i. Feed manipulation to reduce urine-N output
    j. Ranking N mitigation options
24. Identifying and manging N hotspots
25. Understanding crop nutrient requirements
26. Understanding and preparing for zero-carbon 2050
    a. Greenhouse gases and effects
    b. Our emissions
    c. Our international obligations
    d. Our response
    e. Understanding farm GHG emissions and the IPCC requirements
    f. Forestry as mitigation
27. Freshwater Farm Planning concept without any regulations
    a. General information
    b. Mapping
    c. Risk assessment
    d. Nutrients
    e. Farm effluent
    f. Land and soil
    g. Water and irrigation
    h. Pesticides
    i. Waterway structures
    j. Wastes and wastewater