Effective Farm Environment Management under the RMA

March-April 2024 Two-Day Training

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

By

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ENVIROKNOWLEDGE®

HIGH QUALITY RMA & ENVIRONMENTAL KNOWLEDGE TRANSFER

Understanding the True Science of Farm Environment Management under the Resource Management Act

Why is this training crucial?

Under the *Resource Management Freshwater Farm Plans Regulations 2023*, Freshwater Farm Plans (FWFP) are required to manage catchment water quality or Freshwater Management Units (FMUs). Farmers need to prepare FWFPs whilst regional councils must approve (by certifiers) and monitor (by auditors) implementation. The process could cost the farmers substantially leading to ongoing non-compliances as such we must ensure the process is not 'tick the box' but leads to improvement in freshwater ecosystem performance without stifling farm profitability.

The crux of the implementation of the FWFP is recognising and executing effective catchment, regulatory (compulsory) and supplementary actions. Poor actions or actions based on poor scientific rationales will result in little or no changes to freshwater ecosystems and ongoing farmer non-compliances leading to infringement fines or higher legal actions. Regulatory actions based on poor rules will have the same negative outcomes, as such win-win rules must be developed.

The main objective of this advanced training is to empower the attendee, whether you are certifier, auditor or council land management/compliance/science/planning staff to differentiate between effective and non-effective regulatory, catchment and supplementary actions to enable effective implementation of the RM FWFP Regulations 2023. ENVIROKNOWLEDGE® actively advocates for a nationally consistent use of effective and scientifically proven farm plan actions co-ordinated by the central government, regional councils and the industries.

Who can benefit?

- Regional Council -Field or Land Management, Science, Planning, Consents, and Compliance Staff
- Certifiers or to be certifiers under *Resource Management (Freshwater Farm Plans) Regulations 2023*
- Auditors or to be auditors under *Resource Management (Freshwater Farm Plans) Regulations 2023*
- 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), NES-F (2020) and RM (FWFP) Regulations 2023, 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 www.enviroknowledge.co.nz/assets/Uploads/Workshops/ENVIROKNOWLEDGE-Training-and-Services-Compendium-for-ALL-Clients-January-2024.pdf

[1]Workshop fee/person: **$1475 (excluding GST) (2018 price)**
Scheduled workshop time: **9 am to 5 pm daily**
Registration final date: **22 March 2024**

Venue	Workshop dates
Christchurch – Russley Golf Club, 428 Memorial Avenue	25 & 26 March 2024
Hamilton – Aaron Court Motor Lodge, 250 Ulster Street	4 & 5 April 2024
Dunedin – Alhambra Oaks Motor Lodge 558 Great King Street	15 & 16 April 2024

[1]Workshop fee Includes lunch, tea/coffee, hard copy colour 2024 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).

EFFECTIVE FARM ENVIRONMENT MANAGEMENT

ENVIROKNOWLEDGE® March-April 2024 WORKSHOP FOR THE FIELD/LAND MANAGEMENT, SCIENCE, CONSENTS, COMPLIANCE, PLANNING and CONSULTANCY PROFESSIONALS

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16. Soil biology including earthworm activity
    a. Soil carbon and microbial activity
    b. Earthworms
17. Understand N and P forms clearly
    a. Nitrogen basics
    b. The N species you must know
    c. P basics
    d. P form and availability in soil and water
18. Phosphorus in soil
    a. How and which forms of P are held in soil?
    b. Significance of Olsen-P in NZ
        - How is Olsen-P measured and reported?
        - 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?
19. 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
20. 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
21. Irrigation and water use
22. 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
23. Understanding livestock productivity
    a. Breeding potentials and rearing
    b. Feed requirements
    c. Fertiliser-nitrogen management
    d. Stocking rate management
    e. Soil management
24. 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?

25. 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
26. 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
27. Identifying and manging N hotspots
28. Understanding crop nutrient requirements
29. 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
30. Freshwater Farm Plan implementation
    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