NIWA
Taihoro Nukurangi

FOCUS: Maximising the effectiveness of farm plans

Prepared for Envirolink

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Executive summary

FOCUS is a framework that formalises the link between catchment land use activities and farm water quality planning undertaken by Land Management Officers (LMOs). FOCUS was developed with LMOs from Greater Wellington Regional Council, and builds on a long history of farm planning with the goal of ensuring that farm planning is focused, efficient and most importantly, results in effective action on the ground. The result of this process is a modular, flexible, living and simple framework delivered in five modules – "Signal of Harm", "User Training", "Catchment", "Farm" and "Outcomes".

FOCUS is designed to:

- help users identify what is working;
- introduce some new ideas;
- make effective use of the best available science;
- be customised;
- help notice change; and
- ensure change is documented.

FOCUS starts with the question – "What is the signal of harm?" - before work on the other fourteen main tasks commences. The **Catchment module**: allows rapid creation of a knowledge bank, exploration of local resources, assists in identifying the role farm plans might play in the catchment, and helps identify where to roll out farm planning first. The **Farm module** is based around a customised Farm Action Plan, with the farmer in the driver's seat and the LMO as a guide. The emphasis is on promoting frequent, fully documented, progress-focused conversations between the farmer and LMO. **User training** is designed to ensure LMOs have an understanding of how to use and customise FOCUS, identify training needs, and provide an introduction to progress-focused conversations. Activities, outputs and outcomes are tracked in FOCUS, including documenting changes in farmer awareness and progress on the ground. In most catchments the **Catchment** and **Outcomes** modules would be completed prior to the Farm module, Farm outcomes and Catchment modelling tasks.

During the project the need for a user-friendly, visual product emerged, along with a desire to have a living tool which could be edited, updated and customised. FOCUS is delivered electronically as a series of dynamic documents, rather than a report. FOCUS is presented as a VUE (Visual Understanding Environment) content map – nodes with attached documents (Microsoft Word or pdf format) or web links. Many supporting documents are contained in the VUE package, including: FOCUS User Guides, a review of mitigation tools, journal papers and abstracts, web links and others. New users are directed towards the User Guide.

FOCUS provides a suite of tasks that have been developed in consultation with experienced users. In the case of FOCUS, a team is established comprising the LMO and the farmer. FOCUS facilitates the effective use of the unique combination of their knowledge, skills and experience to make land management changes that are likely to deliver catchment water quality improvements.

Albert Einstein once commented that "Things should be made as simple as possible - but no simpler". Anyone can simplify something by leaving things out - the challenge to LMO and farmer is to simplify what they do whilst ensuring the process remains effective. We have reflected on what was wanted,

what was already working and how to change it to encourage action on the ground that will make a difference to catchment water quality AND how to track and document social and physical change. By adopting Solutions Focused approaches we have delivered tasks for LMOs to rapidly build knowledge about a catchment and engage farmers to build positive change. FOCUS is a template for users to customise. Our aim is for FOCUS to be a simple, living framework that can be refined to suit the specific circumstances of each catchment and its communities.

1 Introduction

Individual catchments are unique according to their land-use, soil types, climates, hydrology, amongst many other variables. Current Regional Council programmes tend to adopt a "one-size fits all" approach when dealing with water quality issues across catchments, with little regard for the relative importance of the variables that determine or control overall water quality. FOCUS has been developed with Land Management Officers (LMOs) from Greater Wellington Regional Council (GWRC) to help ensure that the farm planning implemented in an individual catchment will be customised. This will ensure that council and landowner funds are spent on management and/or mitigation options that are most appropriate.

FOCUS is a framework that formalises the link between catchment land use activities and farm water quality planning undertaken by Land Management Officers (LMOs). LMOs play a unique role - they are the front-line workers for Regional Councils, building relationships with land owners (on behalf of the community), sharing knowledge, linking people, and instigating and observing change. FOCUS was developed with LMOs from GWRC, and builds on a long history of farm planning. It has the goal of ensuring that farm planning is focused, efficient and most importantly, results in effective action on the ground. FOCUS is a flexible, simple framework which makes use of existing tools, models, data, plans, and databases by showing the links between knowledge, actions and outcomes.

This report contains a short overview of the project development and the modules that comprise FOCUS; more details and supporting documents (including FOCUS User Guides) are in the FOCUS VUE package which can be downloaded from the Envirolink website.

Project inception

The framework was developed principally to assist Regional Council staff involved in the development of Farm Plan programmes and catchment management plans. The initial proposal for the tool to Envirolink was backed by land and water managers in several Regional Councils, including GWRC, Horizons, Waikato and Southland Regional Councils.

The project proposal states that:

This tool will help ensure that an appropriate approach will be adopted in an individual catchment according to the scenario encountered. This will ensure that funds are spent on management and/or mitigation options that are most appropriate. The project will produce a tool to link resource management issues identified at catchment scale with good management practices that may be applied at farm scale. The tool will help identify where nutrient attenuation measures (implemented via farm plans) should be targeted in a catchment, while providing a method whereby the cumulative effect of farm plans on catchment-scale outcomes can be quantified.

The tool will help optimise resource use by prioritising where on-farm works should occur within a catchment and by allowing the net effect of farm plan implementation to be assessed. This will be done by incorporating additional variables e.g., soil type, land class, hydrology, land use and the targeted pollutant (N, P, sediment, E. coli*) in the farm plan development and implementation process.*

The tool will consist of a framework and process for linking farm-scale outcomes, including guidance on how to use databases such as s-map and LRI (or local databases at finer scale), and existing models such as OVERSEER and CLUES (Semadeni-Davies et al. 2011) to prioritise interventions and quantify outcomes. These approaches will be illustrated with case studies that will be documented in a guidance document. We envisage that the tool will take an approach that will allow different levels of data, modelling, and assessment to be used.

The tool will use catchment-scale information to help identify

- *those areas within a catchment where farm plans should be targeted and prioritised,*
- *which issues should be included in a farm plan, and*
- *the specific methodologies likely to be most effective that should be included in each farm plan.*

In addition, the methodologies will enable cumulative benefits likely to be derived at catchment-scale following implementation of a series of farm plans to be identified.

The immediate benefit of this tool will be improved access to methodologies and models for developing targeted farm plan programmes. Use of the tool will enable more targeted and efficient use of resources directed to managing land and water degradation. Ultimately this will lead to reduction in land and water degradation arising from pastoral land use, improved economic outcomes through targeting of resources, and improved community engagement through clearer linkage between farmer actions and community aspirations.

2 Framework development

The framework was developed in a series of workshops and project team meetings. The core project team members were:

- Lucy McKergow and Sandy Elliott (NIWA),
- Tony Faulkner, Andrew Stewart, Richard Parkes, Scott Ihaka (GWRC), and
- Alec Mackay and Mike Freeman (AgResearch).

Table 2-1: Chronological record of key workshops, meeting and presentations.

Project activity	Date	Participants	Key outcomes
Workshop	18 Dec 2012	AgResearch – Mike Freeman, Richard McDowell BoPRC – Simon Stokes Landcare Trust – Nick Edgar GWRC – Tony Faulkner, Emily Greenberg, Richard Parkes, Terry Parminter, Andrew Stewart NIWA – Sandy Elliott, Lucy McKergow, Chris Palliser, John Quinn, Bob Wilcock, WRC – Ross Abercrombie Apologies: Grant Cooper (Horizons) and Alec Mackay (AgResearch) due to travel difficulties. Mike Scarsbrook (DairyNZ)	Overview of project. Overview of Overseer, CLUES, CSA Tool (now MitAGator). General discussion about tool characteristics.
Meeting (video/tele conference)	18 Feb 2013	NIWA – Sandy Elliot, Lucy McKergow GWRC – Tony Faulkner, Richard Parkes, John Drewery, Emily Greenburg, Andrew Stewart, Terry Parminter. AgR – Mike Freeman, Alec Mackay	Memo from GWRC on expectations. Agreement that NIWA & AgR will draft a project plan and draft framework
Meeting (video/tele conference)	28 May 2013	NIWA – Lucy McKergow, Sandy Elliott,	Draft framework presented and approved..

Project activity	Date	Participants	Key outcomes
		AgR – Mike Freeman, Richard McDowell, Alec Mackay GWRC – Tony Faulkner, Andrew Stewart, Terry Parminter, Penny Fairbrother	
Presentation	3 Sept 2013	Lucy McKergow	Presented draft framework to Land Managers Group. Request made to retain what's working.
Presentation	18 Feb 2014	Lucy McKergow	Presented draft tool at Fertiliser and Lime Workshop.
Workshop	24–25 Feb 2014	NIWA – Lucy McKergow, GWRC – Tony Faulkner, Andrew Stewart, Scott Ihaka, Richard Parkes	Developed Farm module – what's wanted, what's working.
Workshop and training	1–2 Apr 2014	NIWA – Lucy McKergow, GWRC – Tony Faulkner, Andrew Stewart, Scott Ihaka, Richard Parkes	Developed Catchment module further - what's working and refined what's wanted. Training in progress-focused conversations.
Presentation	14 Oct 2014	Lucy McKergow	Presented tool at NZARM Conference, Wellington.
Workshop	21–22 Oct 2014	NIWA – Lucy McKergow, GWRC – Tony Faulkner, Andrew Stewart, Scott Ihaka, Richard Parkes, Scott Andrews, Michelle McCabe, Melissa McDougall	Test driving/training catchment module.
Training	September 2014 and ongoing	Annette Semadeni-Davies (NIWA)	CLUES training (not funded by project).
Training	Ongoing	Lucy McKergow (NIWA)	FOCUS training (not funded by project).

The first workshop was held in December 2012, where it was agreed that the project focus should be on making the best use of existing tools and that no new models would be developed. The role of existing tools in this new project was recognised, with presentations on Overseer, CLUES and the CSA Tool (now MitAGator). Although integration of these tools is not frequently achieved, is was identified as a specific objective for this project. Issues of spatial scale featured in the discussions – many datasets and models operate at 1:50,000 scale, whereas the scale at which implementation of management activities is required is much finer (e.g., 1: 10,000 or finer).

At a follow-up meeting held in February 2013 it was agreed that NIWA would develop a draft framework. During this work phase the literature was reviewed to identify similar tools. Two tools with desirable features were identified: (i) Territ'eau (Gascuel-Odoux, Massa et al. 2009) and (ii) the Strategic Catchment Initiative (Mainstone, Dils et al. 2008). The draft framework was presented to the project team on 28 May 2013. The desirable features of existing models that were identified for possible incorporation in the tool are listed in Table 2.

Table 2: Assessment of features that we might adopt from overseas frameworks.

Framework	Characteristics	Features we might adopt
Territ'eau (Gascuel-Odoux, Massa et al. 2009)	WQ protection goal	✓
	Catchment scale – community participation process	
	Modular – issues, landscape diagnosis, contaminant modules	✓
	Includes assessment of non-productive land and natural attenuation features	✓
	Links existing models	✓
	Contaminant modules fate scales from paddock to sub-catchment	
	Holistic and multi-contaminant	✓
	Individual farmers are provided with maps and plans for farms	
The Strategic Catchment Initiative (Mainstone et al., 2008, Figure 4)	Single officer runs Initiative	✓
	High and low risk farms have a different route through framework	✓
	Undertake catchment appraisal	✓
	Assess likely benefits of change (models and literature)	✓
	Predict environmental benefits of agreed farm plan actions	✓
	Officer to monitor management changes	✓
	Closely linked farmer advice and catchment priorities	✓
	Links existing tools and methods	✓
	Enhance existing monitoring as appropriate	✓

A basic framework was agreed in May 2013 (Figure 1). The framework set the boundaries for the tool:

1. a land management officer (LMO) was identified as the primary user of the tool (their relationships with other people was described)
2. catchment targets and values were outside the tool scope (but were identified as desirable for inclusion in the process)
3. flexibility was necessary, to enable use of models with available data
4. use of or production of a flexible, rather than prescribed or generic, farm plan
5. flexible catchment water quality outcome assessment and modelling.

The need for catchment targets was recognised – these would effectively provide the benchmarks against which water quality improvement would be assessed. Setting targets to protect desired community values is a community-driven process however, and falls outside the scope of this project. The need to include a short guidance document was agreed.

The overall structure has remained stable throughout the project. The framework was nameless until October 2014 and was variously described as a tool, framework or process. We prefer the term framework as FOCUS is a skeleton or structure to guide LMOs, rather than a tool or prescribed process. Our framework is called FOCUS because:

i. it is an acronym derived from the main modules **F**arm, **O**utcomes, **C**atchment and **US**er Training,

ii. its purpose is to focus attention on areas of catchments and farms, and

iii. it uses Solution Focused approaches to assist with decision making.

2.1 Mangatarere case study

Throughout the project the Mangatarere Catchment has been used as a case study. The Mangatarere Stream is a small gravel-bed river in the central Wairarapa. The stream drains the foothills of the Tararua range, flows across the plains and enters the Waiohine River south of Carterton. Half of the catchment lies within the Tararua Forest Park and is covered in native bush. The plains have been developed into pasture, and are primarily used for dairy and drystock.

A decision was made early in the project to develop methodology prior to working in a real catchment. However, as tasks were developed they were tested in the Mangatarere. When task instructions require an example, one is typically provided for the Mangatarere. A separate layer in the VUE package contains the Mangatarere case study documents. Care has been taken to respect farmer confidentiality at all times.

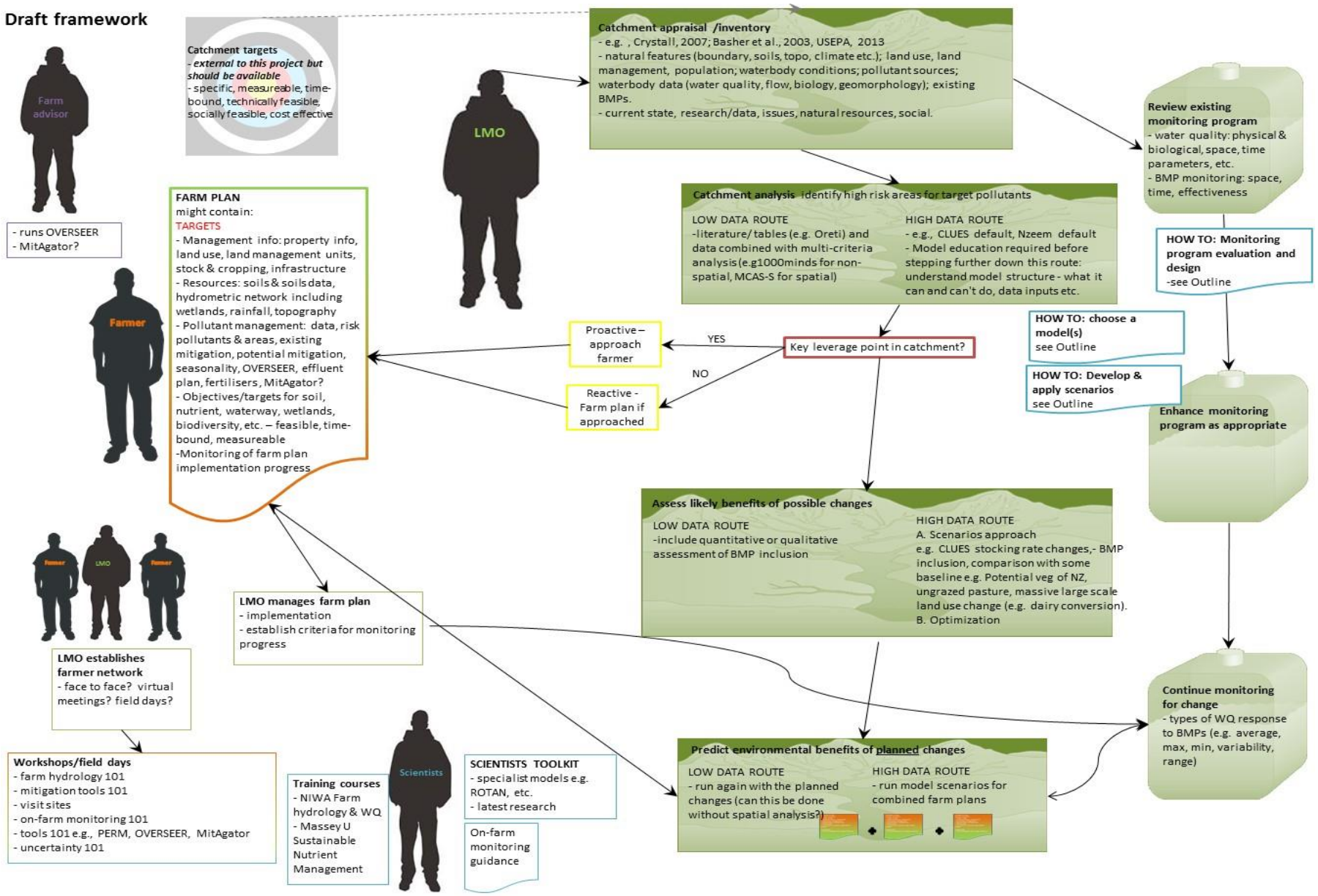

Figure 1: Draft framework presented May 2013.

3 FOCUS

3.1 Introduction

Use of whole farm planning as a tool to achieve sustainable land use practices has a long history in the Greater Wellington region, with the first plan being prepared in the 1950s. The target of these plans was soil erosion on hill country properties in the eastern Wairarapa. Gross sediment erosion is visible on the land and downstream in rivers as turbid water – under these circumstances engaging farmers is a reasonably straightforward task. More recently, however, the target of catchment management plans has widened to include nutrient and faecal contamination of waterways, which are not always immediately visible. Farm planning has slowly grown to include a greater diversity of land uses and has been extended to address a wider range of water quality issues (including nutrient and faecal contamination).

FOCUS builds on the long history of farm planning by developing protocols that land managers can use to prioritise and identify where mitigation practices (implemented via farm planning) should be implemented to address specific water quality issues within a catchment. The goal is to develop a simple framework that assists LMOs:

- identify key leverage farms within a catchment (where changes in land use practice will yield the greatest water quality benefits) and
- engage with farmers to explore how
  - current practices impact on water quality, and how
  - future land use practices may lead to water quality improvement.

The underlying principles adopted for FOCUS are to:

1. Do more good.
2. Identify opportunities for change*, not problems.*
3. Identify how to take the *best* actions first.
4. Use the *best* available science.
5. Document all decisions and the rationale used.

FOCUS provides a positive and pragmatic approach to change and our hope is that it is a living process that continues to evolve as new tools are developed. It is a flexible and simple framework that makes use of existing tools, models, data, plans, and databases. FOCUS is designed to enable the primary user (LMO) to work with four contaminants – sediment, nitrogen, phosphorus and faecal microbes. In some catchments the input of all four contaminants must be addressed, while in others only one or two may be of concern. It is worthwhile highlighting what FOCUS is not. FOCUS is NOT an ICM or model. Table 3 provides a simple summary of what FOCUS is and is not.

Table 3: FOCUS framework boundaries.

FOCUS is	FOCUS is NOT
designed for a primary user = land management officer focussed on addressing four key contaminants: sediment, nitrogen, phosphorus and faecal microbes focussed on solutions a framework to optimise the use of existing tools intended to capture and use valuable farmer knowledge based on best available science, but recognises that other credible and relevant sources of knowledge exist a framework for identifying farms that require closer scrutiny useful for feeding farm information back into outcomes modelling intended to facilitate 1-on-1 farm planning using other tools as required	an ICM a model a target-setting process a values-identification process

FOCUS makes use of several Solution-Focused approaches as aids for decision making and amplifying change. Helping farmers find solutions to environmental issues is about *change* (supported by science and economics). Most approaches aimed at affecting change seek to discover what to do next by examining the problem and seeking to address it. This works well for relatively simple systems such as faulty cars or washing machines, where there is a clear link between the problem (the spin cycle does not work) and the solution (replace the printed circuit board). It is far less effective for complex systems that involve people and natural systems, where "solution-focused approaches" are more useful.

We used three solution-focused approaches:

1. Structured Decision Making (Gregory, Failing et al. 2012).
2. Solutions Focus Risk Assessment (Finkel 2011).
3. Solutions Focus (Jackson and McKergow 2007; Jackson and Waldman 2010).

These approaches focus on making decisions (either large or small/experimental), are iterative, explore what matters, value creativity, and do not presuppose that a single "right answer" exists. By travelling a different route to the problem-centred approach, we deliver:

A. an efficient analysis route for LMOs, and
B. a mechanism for engaging farmers in the process leading to solutions.

FOCUS as five modules – Signal of harm, User Training, Catchment, Farm and Outcomes (Figure 2). Each module has several main tasks. FOCUS is a flexible framework, not linear or cyclic, so we present the main module tasks as a camera focus frame. FOCUS starts with a signal of harm – basically an assessment of whether there is a water quality (WQ) issue, and identifying what

evidence there is to support this assessment. In most catchments the next step would be to start the catchment focus module, before starting work with farmers. However, in those catchments with a long history of farm planning, revising the farm plans may be done concurrently with the catchment module tasks. User training is a key component of FOCUS and it's designed to ensure LMOs have the skills required for this catchment, FOCUS training and exercises to develop awareness of progress-focused conversations. Outcomes are tracked throughout the FOCUS modules. There is also a prototype FOCUS Outcomes Map and associated Information Gathering Plan.

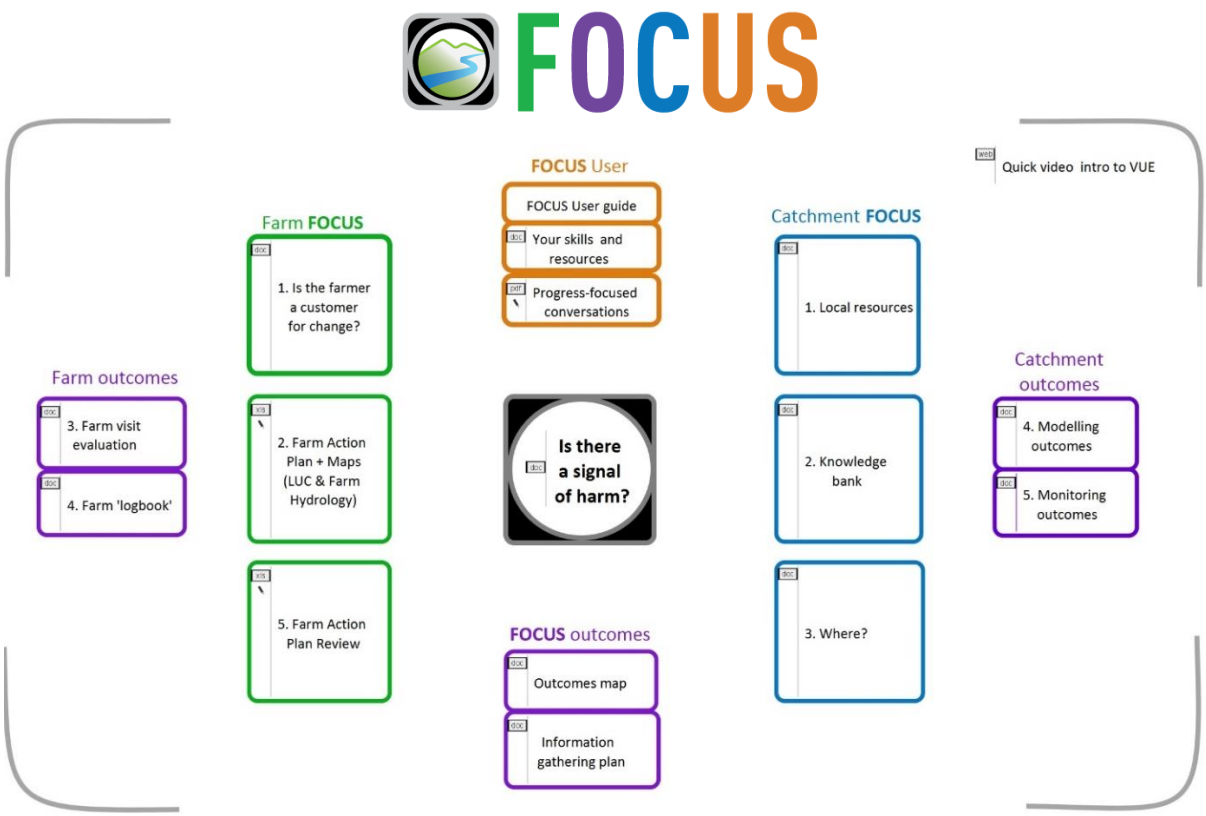

Figure 2: FOCUS main frame in VUE. The main starting point is the central focus point. Module tasks are farm related are on the left, catchment tasks on the right and outcomes are distributed. All nodes are colour coded (Farm = green, Outcomes = purple, Catchment = blue, User Training = orange.)

Module 1: Signal of harm

FOCUS starts by identifying 'signals of harm', i.e., a water quality issue where there is clear evidence that water quality does not meet the purposes required by the community. If no 'signal of harm' exists then there is no need to go further, unless the land owners wish to better understand the current impact of their enterprises on water quality. The signal of harm provides the boundaries for what is to follow – definition of the contaminant(s) and the adverse impact on waterbodies (river, lake, aquifer, etc.). The signal of harm might also be used to evaluate progress, and once the catchment outcomes tasks are reached, the evidence for the signal of harm is reviewed. Gaps in the evidence of signal of harm will also provide justification for additional monitoring. Despite the existence of gaps however, decisions can still be made and steps taken to improve catchment water quality.

A good understanding of what constitutes an acceptable or unacceptable water quality outcome is therefore critical. Deriving desired water quality values is outside the scope of this tool. Some

communities will have been through a water quality values project recently (e.g., Wheel of Water, Zone Implementation Plan process, RIVaS etc.,) and these are a valuable resource for FOCUS. In other catchments, the community consultation processes used to develop regional plans should provide insights into the water quality outcomes desired by the community.

Module 2: FOCUS Training

There are three main components in the training package: i) a training workshop, ii) progress-focused conversation training, and iii) a skills questionnaire. The tool training workshop covers all aspects of the tool – what it is, how to use it, and when to engage in the different tasks. All tool training is hands-on and involves working through a case study catchment.

An introduction to progress-focused conversations, their potential in farm planning (McKergow and Faulkner 2014), and basic training exercises are provided in the User Training module. This style of constructive conversation is simple to learn, respectful and motivating. It can be learned and practiced in a two day course with some follow up sessions.

Although farmers seek and are offered advice by many experts or consultants, the LMO plays a unique role in linking farm activities to catchment water quality. Consideration of the skills and resources held by a LMO will help them determine how they may best assist farmers in a particular catchment. For example, a LMO might need to deal with faecal contaminant issues for the first time, and may wish to explore and broaden their understanding of the issue before engaging with landowners. The questionnaire takes them through a progress-focused conversation.

Module 3: Catchment FOCUS

There are three main tasks in the catchment module:

1. Creation of a knowledge bank and concept map.
2. Exploring local resources.
3. Identifying “where?” i.e., where should intervention be prioritised?

The tasks are undertaken by the LMO, with support from others as necessary.

Local resources is a questionnaire prompting a LMO to identify and reflect on resources and people that are available to support them – other Regional Council staff, local community group members, farmers, DairyNZ consultants, agricultural sector discussion groups, agricultural consultants, BMP demonstration sites, existing land care grounds, etc. Identifying and tapping into the undocumented local resources is an important initial task when beginning a catchment intervention process.

The **Knowledge Bank** is a series of questions designed to help pull available information together over a timeframe of days rather than months. It includes thinking about what’s going well in the catchment, and identifying solutions likely to be suitable for this catchment. This leads to recognising and valuing what is already good or effective, rather than focusing on the problems. A mitigation pyramid is developed for the catchment as both a learning and teaching tool. At the pyramid's base are methods for building soil health and controlling pollution generation, followed by methods to control water in and below paddocks and lastly riparian management. The final step is a concept map or knowledge network to link values, processes and mitigation tools in a manner that captures the complexity of the catchment. It is included as a learning and teaching tool and takes the form of a document that will evolve over time as new information becomes available. As a learning tool, it

helps untangle thoughts and allows the LMO to understand complex processes and interactions; as a teaching tool, it assist a LMO to communicate understanding of these complex processes and concepts to others.

Where? answers the question "*where in the catchment should I take a closer look*?" This task explores how each farm might be contributing to the status of existing catchment water quality. The aim is not to classify parts of the catchment as "good" or "bad", but to decide whether any given area or farm is worthy of further investigation. Each contaminant is considered separately, rather than trading-off between contaminants. The task brings together evidence from the concept map, monitoring data, information derived from a Geographic Information System (GIS) and models, to identify farms in the catchment where closer examination is warranted. This process aims to provide sufficient information to complete the task without overcomplicating it by including too many models or variables. Procedures and interactions with models have been designed so that the GIS remains a useful tool, and the information can be extracted as efficiently as possible. Each Evidence Source has a short (1-2 page) FOCUS User Guide, and links to supporting material are included in the VUE package.

As a consequence of using many different data sources, some strands of evidence may lead to conclusions that are inconsistent with others. So there is a requirement to incorporate a specific step that includes assessment and objective evaluation of the evidence. The final product is a list of farms where more detailed investigation should take place.

The first workshop (Dec 2012) identified that in order to use and compare mapped/modelled information, some type of data assessment is required. The tool includes and makes use of multiple types of evidence e.g., observational, monitoring, experimental, model output – guidance is provided on how information derived from various sources should be integrated, compared and evaluated. A specific task has been developed in order to facilitate rapid assessment of the evidence for each farm. The basic hypothesis for this task is 'runoff leaving this farm does not impact water quality for X use downstream' (the identified uses come from the Knowledge Bank task).

The evidence assessment task principles are:

1. All relevant knowledge must be included, regardless of source.
2. An open exploration of the quality of data with full documentation.
3. An assessment of data quality – relevance, reliability and sufficiency for this catchment.

The three basic criteria used to assess the evidence are – relevance, reliability and sufficiency. The relevance of the output is examined by clarifying how it affects the decision, for example "*Does it help to distinguish between farms*?" For example, if N leaching loss is HIGH throughout a catchment it will be a poor discriminator for prioritising (but indicates that N mitigation might be required on all farms). Reliability of the information is assessed by asking "*What are the inconsistencies?"* and then "*Is each evidence source suitable?"* The question of sufficiency includes addresses "*What are the consequences of being wrong?"*

Module 4: Farm FOCUS

Ownership of the process whereby water quality is to be improved by the farmer puts the farmer in the driver's seat, with the LMO as the co-driver or navigator. The underlying philosophy of this module is to help farmers collate what they know about the situation and take some meaningful actions. Farmers are a highly diverse group with different resource endowments and exposures to risk; production needs; tenure arrangements and ownership goals; environmental motives; personalities; tendencies regarding engagement with programmes; and social networks (Reimer, Thompson et al. 2014). Recognition of a water quality problem across a community and a commitment by all to do something about it are necessary for change to occur. Progress-focused, constructive conversations provide the motivation leading to action and subsequent improvement in water quality.

The initial task in the Farm module is to ask "**Is the farmer a customer for change?"** In initial conversations, LMOs will need to assess whether a farm decision maker is receptive and willing to explore and to enhance understanding of the impact that their farm system may have on water quality. Some land owners may have little interest in understanding the impact their business has on water quality or learning more about land use-water quality relationships. The interest from the farmer will determine the approach the LMO takes. For example, the conversations and resources used by LMOs with farmers who approach GWRC for farm plans will be very different from the approach used with land owners who see little merit in formal land use evaluation and planning. In the latter case, the LMO would need to focus on relationship-building before proposing farm planning.

The proposed Farm Environment Plan has two key components: a spreadsheet file of the **Farm Action Plan** (FAP) and **Maps** (MAP; such as Land Use Capability, Farm Hydrology, annotated aerial photographs). It is also anticipated that any previous farm planning and OVERSEER® nutrient budgets will be built into the plan to avoid replicating previous work. Additional tools, such as visual soil assessment, DairyNZ Farm Enviro Walk, and the Beef+Lamb LEP Tool Kit, might also be appended.

In FOCUS, the time frame for **Farm Action Plan Reviews** is customised. Currently at GWRC Farm Environment Plans are formulated as annual plans. However, more frequent FAP reviews might result in additional actions and also enable change to be identified and documented. The FAP review could be completed as a short, structured telephone conversation on a mutually agreed time frame depending on the rate of change and need for support. For example, a farmer might want a review in three months and then move to six-monthly conversations. Short reviews might also be undertaken opportunistically when a farmer contacts an LMO.

The **Farm Action Plan** (FAP) is developed on farm in a simple spreadsheet format. This style suits LMOs as it is completed on the spot without requirement for additional editing or write up. The Farm Action Plan has three components:

1. Collating basic farm information and reviewing previous farm planning ("basic details").
2. Establishing the farmer's understanding of how the farm fits into the catchment by asking open questions ("catchment context").
3. Conducting a "progress-focused conversation" on issues the farmer identifies as important and wants to do something about.

The **Basic details** starts with an overview of the farm system and includes previous planning or data. Establishing the soils, farm type, stock policy, farm performance and the farmer's personal and business goals, the current and potential future opportunities and associated constraints and risks to the business are key first steps in advancing any conversation by LMOs. This ensures a holistic approach to advancing sustainable land management. During this conversation, the LMO might will ask about previous farm planning and identify potential tools (or parts of tools) that are a good fit (e.g., visual soil assessment, a farm hydrology tool, DairyNZ Farm Enviro Walk, and the Beef+Lamb LEP Tool Kit). The LMOs might also have a local "library" of OVERSEER® mitigation scenarios to share with farmers.

Placing the farm within the wider **catchment context** includes using catchment maps and asking open questions as next important steps. The conversation will help both the land owner and LMO quickly establish the influence that the farm could be having on current catchment water quality. Importantly, if a farmer expresses the view that faecal contamination of surface water is the main issue facing farming in the catchment, the LMO can use this interest to initiate a conversation that explores the linkage between farming practice and catchment water quality outcomes. While the processes leading to faecal contamination within this catchment may not necessarily be relevant to nitrogen, phosphorus or sediment pollution, the conversation will create the opportunity to talk more broadly about the relationship between on-farm decision making and wider catchment water quality outcomes.

Once an issue has been identified, a **progress-focused conversation** is used to complete the Farm Action Plan on issues that the farmer has identified and **wants to change** AND **is willing to take personal action.** Each issue might also be given a project name by the farmer, helping to cement what is wanted and also maintain farmer ownership of the solution-building process.

The progress-focused conversation uses simple questions such as *what's wanted? what's working?* and *what's next?* to explore and develop customised solutions. The building blocks for change are much more likely to come from activities that are already leading to positive water quality outcomes. During this conversation, the LMO is looking for historical and current examples of success. These simple questions are embedded in the FOCUS FAP template, along with questions that will ensure that the benefits arising from implementing the FAP and positive changes are recognised. "What's working?" is used to build a foundation using existing knowledge (there is no need to start from scratch), identify resources and skills and identify what is currently resulting in good water quality. This will help maintain the status quo – it is easier (and of course preferable) to maintain existing good water quality than it is to restore it.

The progress-focused conversation is based on the successful OSKAR coaching model (Jackson and McKergow 2007), which provides a series of steps for structuring Solution Talk. OSKAR is an acronym for Outcome, Scaling, Know-how, Affirm and action and Review. It is a flexible and versatile framework so not every element needs to be used every time. OSKAR can be used for both face-to-face and telephone conversations.

Use of examples from neighbours or local leaders can also be very useful in enabling change. If the LMO does have technical expertise that it would be beneficial to share, the know-how is best shared as a *possibility* rather than *the remedy*. Real-life experiences are a solid method for sharing know-how, once permission has been granted (e.g., *Are you interested in hearing how Joe down the road went about this?)*. With agreement from the farmer, it is useful to share the experience, allowing the farmer to extract helpful elements themselves.

For example, in a progress-focused conversation on farm dairy effluent application options are inadequate 60% of the time for various (but identifiable) reasons, the LMO can focus on the times when the system performs well, as a process for lifting performance. This approach is motivating because it focuses on success – those things likely to lead to a good solution. After implementing small changes identified by the farmer (such as staff training or adopting low rate application technology), the period during which land application of FDE is not consistent with water quality outcomes may be reduced to say 10% with minimal effort.

The FAP also includes questions that prompt the farmer to notice change. A simple series of open questions might be used to encourage a farmer establish their own simple monitoring programme and detect and quantify change. This ensures the farmer remains motivated and continues to notice change. For example, a simple programme to monitor change in stream bed condition after fencing cows out of a stream channel might comprise: photographing the stream using a smart phone placed on an angle bracket on a fencepost on the first day of each month after lunch, then pinning a printed photo on the office wall to create a record that demonstrates change over a period of months.

Use of simple, easily understood language that echo's that of the farmer is at the heart of this approach. Confusion, misunderstanding and rejection of the information is more likely when technical language, jargon or 'policy-speak' is used. Using the farmer's descriptions of what they want and what is already working demonstrates that the LMO is listening and understands the issues facing farmers.

Three other tasks were developed to accompany the FAP when appropriate:

1. **Join the dots** is a simple tabular analysis of the existing processes, alternative processes/solutions, leading to detection of change. It is designed to be completed for one contaminant at a time, and is intended to be a learning and creative decision making tool.

2. **Consequence analysis** is used for more important decisions which may involve considerable capital outlay, such as implementing an alternative farm dairy effluent system. A consequence table or matrix is developed that relates solutions to criteria and applies a score or value. This moves beyond the simple pros and cons style of analysis that is often presented to farmers. The latter may be inconsistent, contain gaps, have vague descriptions, include value judgements, confuse means (how?) and ends (why?), and include double counting (Gregory, Failing et al. 2012). A structured consequences table provides the basis for open dialogue about trade-offs. When required, scenarios and optimisation can be used to inform consequence analysis. Where this is outside of the LMO's role, the LMO will be able to suggest a suitable consultant to a farmer.

3. **FOCUS User Guide OVERSEER®** highlights some Overseer key modelling assumptions and potential opportunities to mitigate nitrogen and phosphorus losses to water. The guide explores relevant individual farm opportunities to reduce nutrient losses to water to meet catchment water quality objectives and at the same time consider the implications for the farm business.

Module 5: Outcomes

The LMOs identified the need to track progress. In order to evaluate progress toward water quality objectives and to measure the success of a tool, planning is required to ensure that the necessary data are collected. The tasks are designed to understand the gap between 'what's there now' and 'what's wanted' and clarify the likely causes of changes made to date and changes likely to occur in the future. FOCUS outcome evaluation includes tracking changes in land management, farmer engagement and water quality outcomes. Outcome Map and information gathering plan templates are included in FOCUS. They can be customised to local catchments.

In the **Farm Module,** there are two outcome-focused tasks:

1. **Farm visit evaluation** utilises a short questionnaire designed to be completed immediately after the farm meeting, using data collected along the way. The latter may, for example, be derived from an assessment of the likelihood of actions being undertaken.

2. **Farm logbook** is designed to maintain a record of interactions with the farmer as well as progress on the ground.

The **Catchment Module** incorporates two outcome tasks – catchment outcomes modelling and monitoring.

1. **Outcome modelling** might be achieved using a simple spreadsheet model (such as the Catchment Calculator currently under development at NIWA), which uses the farm as the base unit, and/or CLUES scenario modelling. Local and current farm information can be entered into either model along with mitigation actions. Greater Wellington Regional Council staff have had basic CLUES training to support this task. This task is supported by a **FOCUS Scenario Planning** task (within Modelling Outcomes).

2. Guidance on **catchment scale water quality monitoring** is provided. Guidance is also provided on designing monitoring to match the target audience. Evaluating the effectiveness of catchment scale good management practice is difficult (Meals, Dressing et al. 2010). We cannot afford to extensively evaluate every farm or sub-catchment with the level of rigour that might be desired – this makes it imperative that the monitoring is able to demonstrate that management actions are achieving the water quality outcomes anticipated.

FOCUS Outcomes also has two principal outputs:

1. an outcomes map and

2. a supporting information gathering plan.

1. The **Outcome Map** is built around the concept of the 'splash and ripple' associated with dropping a rock in a pond. The act of dropping the rock is like an ACTIVITY. When the rock reaches the water, it creates a SPLASH, which are the outputs. The RIPPLES, spreading out from the splash are the outcomes (immediate, intermediate and longer term). So for example, if an activity is development of a FAP+MAP package, the output is the completed FAP+MAP, and the immediate outcome is the farmer undertaking action (e.g., modifying a FDE system). Longer term outcomes will include improved catchment water quality.

2. An **Information gathering plan** enables collection of information as work is done, which is subsequently used to evaluate the FOCUS programme and track progress within a one year period. So following the example above, we need to track implementation by the farmer of the originally agreed actions (plus any additional or modified actions). These are recorded in the FAP along with any review; after a period of six months the LMO can assess progress. Both immediate and intermediate outcomes have an information gathering plan.

4 FOCUS testing and improvement

We have operated a process of continual improvement, making small changes made to documents describing tasks as they have been developed. Some examples of task testing and improvements made are outlined in Table 4.

Table 4: Some examples of tool testing and improvement.

Module/task	Evaluation comments
Farm Action Plan	The initial FAP template was successfully tested by Richard with a farmer (who was a customer for change). What made it good included: (i) concise document which captures the relevant information of the farm system, (ii) the farmer was engaged, (iii) the process led us to some genuine outcomes for an action plan and (iv) having the nutrient management information helped start the conversation. The wording needs revising and possible inclusion of a question around environment-business links. The questions have been revised.
User guides	Initially presented as graphics, then a VUE layer, before a final format as a 1 page guide was settled on.
Questions in FAP conversation	Solutions Focus questions can be unusual to ask and answer so they have been revised to a more relaxed, natural style where possible.
Farm visit evaluation	Evaluation allowed thoughts to be captured quickly following the visit.
Local resources	Tested during workshop in February. Revised to include scaling questions.
Your skills and resources	Tested during workshop. Questions revised.
Outcome map	Evaluated during workshop and looks OK.
Information gathering plan	Evaluated during workshop and proposed time frames revised.
Catchment knowledge bank	Might take longer than anticipated, but duration should be days rather than months. All tasks achievable. Task 2 A needs more detail - if catchment targets haven't been set then more guidance is required.
Catchment concept map	More examples included e.g., (Quinn and Rowe 2014).
Evidence sources	Integrated into Where?
Assessing evidence	Integrated into Where?
Where?	Looks sound. Simple instructions.
Join the dots	Terms revised after discussions at meetings.
Mitigation tables	Revised to include upper and lower bounds and faecal microbes.

5 FOCUS delivery

Electronic delivery was identified as the preferred option at the start of the project. During the project the need for a user-friendly, visual product emerged. In addition, a desire to have a living tool that could be edited, updated and customised became apparent. The requirements for the final product included:

1. Freeware.
2. Intuitive and easy to learn.
3. Visual.
4. Ability to add content in a variety of file formats.

A review of software to meet these requirements was undertaken and VUE selected. The Visual Understanding Environment (VUE) is freeware developed at Tufts University and can be used by anyone interested in visually structuring digital content. At its core, the Visual Understanding Environment (VUE) is a concept and content mapping application, developed to support teaching, learning and research, and to assist anyone who needs to organize, contextualize, and access digital information. Using a simple set of tools and a basic visual grammar consisting of nodes and links, users can map relationships between concepts, ideas and digital content.

The FOCUS VUE package mirrors a camera focus. The main tasks are at the centre of the content map and supporting information lies outside the focus area. Supporting information nodes are colour coded and on separate layers so that users can view the information for the tasks they are currently using.

5.1 A quick VUE user guide

1. Download and install VUE from http://vue.tufts.edu/download. You will need to register as a user to download the software.
2. Watch the VUE introductory video on YouTube (VUE Overview, or YouTube search: VUE 2 Overview).
3. Open the project VUE package FOCUS.pkg.
4. Turn on the Layers window (CTRL+5) and turn on and off layers with the 👁 icon to the right of the Layer Name.
5. Use the browse tool  (rather than the select tool) so that you don't accidently move nodes while browsing.

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