

**THE ONE-STOP SHOP:
AN EVIDENCE-BASED APPROACH TO ADDRESSING RURAL WASTE**

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Introduction

The New Zealand Rural Waste Minimisation Project was initiated based on anecdotal evidence both that farmers were burning, burying and storing wastes on their farms, and that considerable harm could result from this sustained behaviour. Leading the Project, Environment Canterbury brought together a group of key industry stakeholders and obtained funding from the Ministry for the Environment's Waste Minimisation Fund to develop an understanding of, and solutions to, these issues.

Specifically, the Project sought to:

- Determine the impacts on and risks to New Zealand's natural resources (land, water and air), economy, and social and cultural wellbeing from current rural waste burning, burying and stockpiling practices.
- Identify new waste minimisation options for rural waste management and assess the technical and economic feasibility of these.
- Develop implementation plans with service providers for feasible waste minimisation options.

Philosophically, the Project sought to build an evidentiary basis for action. Understanding what was actually happening on farms and how farmers perceived issues around waste was key. Likewise, any identified solutions would need to prove themselves in terms of efficacy and economic sustainability through piloting processes and rigorous – and independent – evaluation. It was determined from the outset that assumptions would be avoided and action plans must be based on defensible evidence.

The Project was built on the belief that solutions to the problems around waste on farms would emerge from the private sector. Solutions that required significant government intervention, subsidies or regulation were not pursued. Instead, the Project considered how private sector actors could innovate to refine existing services, or create new services, to encourage alternative avenues for farm waste management beyond burning, burial or storage on-farm.

Methodology and Process

The initial focus of the Project - building on work undertaken to understand waste volumes in Canterbury, the Bay of Plenty and Waikato - was to create a framework for prioritising farm wastes to guide subsequent Project development. By considering the prevalent wastes present on farms, the dominant methods for managing these wastes and the potential harm to people, animals and the environment that may result, a prioritised list of wastes was produced. This list, unsurprisingly, placed on emphasis on agrichemicals, plastics, used oil and a number of other waste streams that were found to be present on farms in high volumes, and with a high potential for causing harm. The Project determined that these waste streams would be the focus for subsequent activity.

The next phase of the Project focused on building an understanding of rural waste management in New Zealand. Extensive research was undertaken to understand the extrinsic and intrinsic drivers acting on farmers to pursue alternative methods for managing waste. This investigation was focused both on understanding why burning, burial and storage of waste were occurring, whether there was an intrinsic desire for change and what factors might be employed to drive behaviour changes.

This phase of work also sought to learn from international experience by studying the solutions in place – and the relevant regulatory and contextual frameworks - in Australia, Canada, the United States, the United Kingdom and Europe. These solutions were carefully examined to determine whether they might be applicable in New Zealand.

A list of potential options to pursue alternative rural waste management in New Zealand was created based on the research findings. As the Project progressed, this list was refined, developed and tested with stakeholders and subjected to robust feasibility analysis.

The assessments undertaken included supply chain modelling, life cycle assessment, financial and operational modelling and risk assessment. Eight initial options were identified, including a mix of refined existing offerings and new models. These options were refined down to five, and a detailed business case was prepared for each one.

Four options were ultimately advanced for further development and piloting:

- *Agrecovery / EnviroWaste Rural Waste Services*: Undertaking a small number of pilot Temporary Pop-up Recovery Events (including new waste streams), coordinated with regional coordination of on-farm collections.
- *Expanded ROSE Oil Recycling Scheme Drop-Off Hubs*: Planning, promoting and executing collection of waste oil and containers at Farmlands stores.
- *Community Organisation On-Farm Collection*: Working closely with specific community organisations to support implementation of on-farm collection services.
- *Fonterra Sharps Collection*: Trialling collection of sharps containers.

Results

Early in the Project, information was sought to determine the level of motivation among farmers to pursue alternatives to burning, burying and bulk storage of farm wastes. This was a key starting point in understanding whether existing and potential services are going to have to persuade customers to even consider utilising a service, irrespective of whether it offers compelling value. A survey of several hundred farmers, spread throughout New Zealand and across different farm types, produced surprising results in seeking intelligence in this area.

Farmers were asked about the methods currently employed to dispose of farm waste. 80% said that burning, burying or bulk storage of waste was a key method used to deal with waste. Yet, when questioned about the degree of motivation to pursue alternative methods, the response from farmers suggested a high degree of motivation, as shown in Figure 1.

It was clearly established that protecting the environment and the 'legacy of the land' particularly, were very high on farmers' agendas. This was confirmed repeatedly in conversations with individual and farmers and focus groups.

Attention had to be focused, therefore, on what was preventing farmers from pursuing alternatives to more problematic methods for managing farm waste.

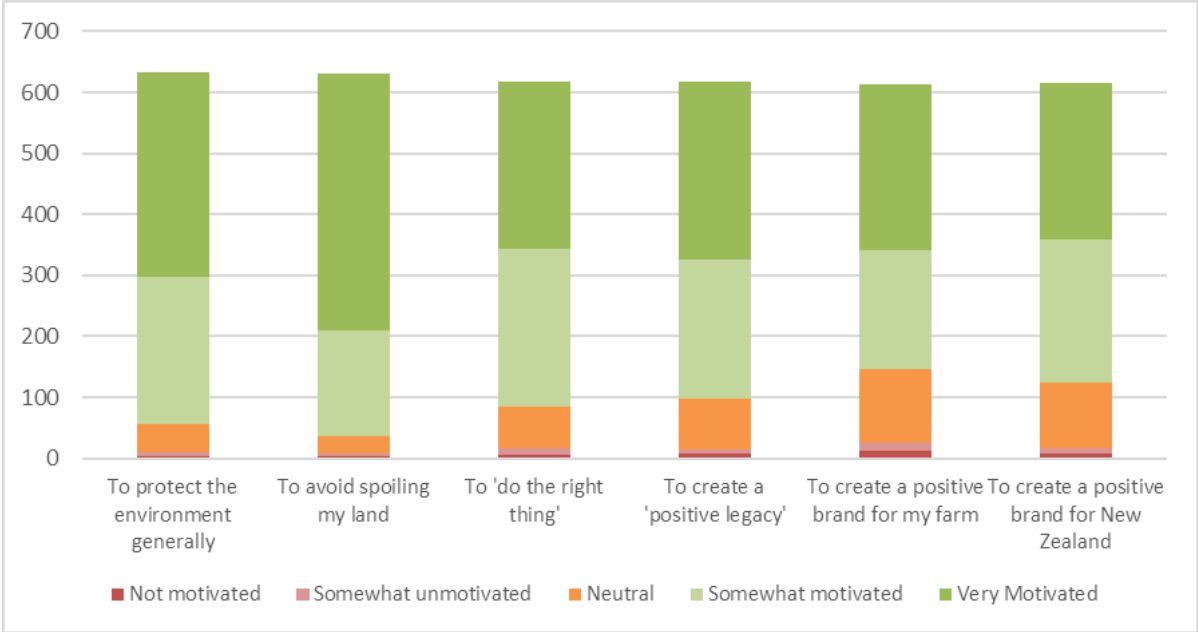


Figure 1: Farmer Survey Results - What motivates you to recycle farm waste?

The research undertaken in the initial phases of the Project identified a number of key barriers to farmers utilising services that were, or had been, available:

- *Cost:* Burning, burying or storing waste is relatively cheap in direct terms. Service offerings tend not to be. In times of uncertainty in the agricultural and horticultural sectors, discretionary spending on alternative waste disposal is likely to be deprioritised.
- *Inconvenience:* Waste services to farmers may require significant travel by the farmer, or service provision may not be timely or reliable. Any aspect of service delivery that asks too much of the farmer is likely to result in abandonment.
- *Lack of incentives:* In most cases, there is no regulatory or other imperative for farmers to pursue alternative waste disposal. Those that participate do so because they believe it is the right thing to do. This requires a level of commitment and determination that not all farmers have.

- *Lack of Awareness:* Despite the best efforts of service providers, many farmers are simply unaware that services are available, or are confused about the details of service delivery, allowable products or pathways to secure service delivery.
- *Lack of Economic Viability:* A service that is not seen as stable and likely to offer consistent service delivery is likely to be avoided. Farmers do not want to invest in the processes required to recycle waste if the company offering the service is not perceived as being sustainable. The reluctance, and now prohibition of post-consumer plastics by China, is just one of many factors among service providers that makes them vulnerable in the marketplace. Farmers tend to perceive this vulnerability.

Further research with farmers suggested that the preferences as to how farmers wished to deal with waste split them into two distinct groups with differing service needs and expectations:

- *High volume users:* Farmers with significant volumes of waste tended to be more comfortable paying for an on-farm collection service. Transporting large volumes of, for example, silage wrap to a secondary location was not considered practical and a general understanding demonstrated that an on-farm collection service that attracted a premium would be required in such cases. Convenience was considered more important than cost avoidance.
- *Low volume users:* Farmers with lower volumes of waste tended to be more willing to drop waste off at a secondary location to avoid paying significant transportation costs. Wastes that were easily transportable could be loaded onto a farm vehicle and dropped off at a convenient location, potentially in conjunction with a 'visit to town' or some other farm-related activities. Cost avoidance was considered more important than convenience.

This realisation suggested that service delivery to farmers needed to be two-tier in order to encourage more 'off-farm waste management', with a drop-off option and an on-farm collection option.

Farmers also tended to be strong in their desire to 'deal with everything all at once'. Having to deal with separate companies or organisations for each discrete waste stream was typically viewed as an annoyance, whereas being able to only deal with wastes from certain manufacturers or brands with a service provider was considered even more frustrating.

Conclusions

The concept of a 'One-stop Shop' for farm waste emerged relatively early in the Project as farmers articulated different aspects of an 'ideal service' that offered flexibility (a cost avoidance focus or a convenience focus), a commitment to understanding the farmers' needs and the ability to deal with all major waste streams simultaneously.

Initially labelled as the *Agrecovery / EnviroWaste Rural Waste Services option*, the 'One-stop Shop' model – as it came to be known – was anchored around regional, 'Pop-up Recovery Events'. These events were conceived as an opportunity for farmers willing to transport waste to bring a wide range of waste streams to a convenient location and drop them off at low or no cost. This would include agrichemicals, agrichemical drums and containers, soft plastics, used oil and containers and potentially other waste streams as required.

Concurrently, the service provider would coordinate on-farm collections for farmers with higher volumes of waste, particularly soft plastics and agrichemical containers, or agrichemicals that were unsafe to transport. By providing a regional focus within a specified and predictable time window, a region would be 'blitzed' and farmers could plan and prepare appropriately. By making the events and accompanying service delivery regular (perhaps twice a year) and rationalising service delivery in this way, significant costs savings for both the service provider and farmers could be enjoyed.

To enable effective service planning, farmers would register for either the event or for on-farm collection via a user-friendly website, and be able to access the services that best meet their needs, with a minimum of inconvenience and cost. The overall model concept is outlined in Figure 2.

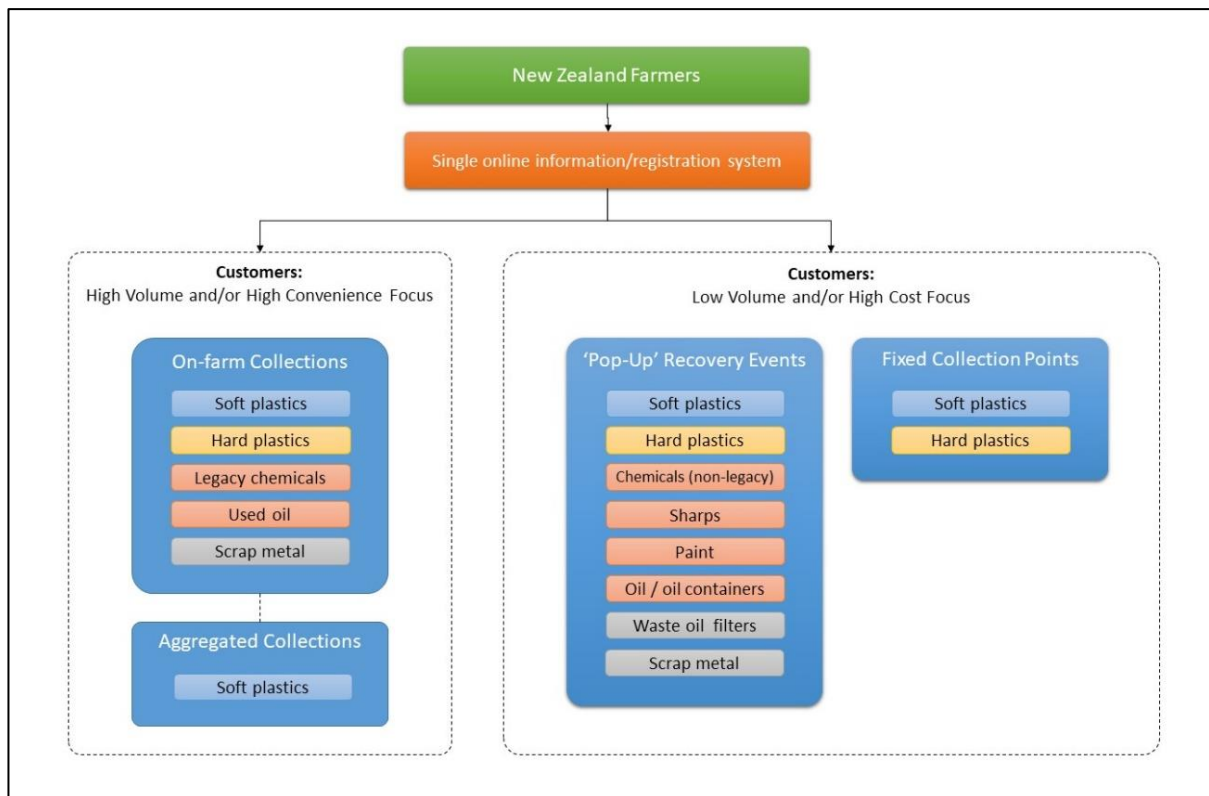


Figure 2: One-stop Shop Model

From the outset, it was determined that the organisation best placed to deliver the ‘One-stop Shop’ model was Agrecovery. As a non-profit organisation with a board that represents a cross-section of farming organisations and with a mandate to ‘address persistent farm waste issues’, Agrecovery was well-placed to expand from its core agrichemicals and agrichemicals containers programmes to offer a more comprehensive service to farmers. Agrecovery was active in assisting in the development of the model design and, in May 2018, Agrecovery hosted two pilot events to test the model in action.

Agrecovery, in partnership with Envirowaste and Plasback, agreed to conduct Temporary Pop-up Events in Matamata and Geraldine in May 2018. The service design was prepared under the Project, and an independent evaluation of the pilots was conducted by the Project, but the events were undertaken and supervised by Agrecovery. Working in partnership with the Territorial Local Authorities in these districts, Agrecovery marketed and supervised the day-long events. Certain waste streams could be dropped off at the events, while larger volumes of plastics were concurrently collected from farms.

Apart from the soft plastics collected by Plasback, all waste streams could be dropped off without charge. The waste streams included were:

- HDPE containers and drums.
- Unwanted agrichemicals.
- Used oil.
- Woven polypropylene bags.
- LDPE soft plastics.

The events were evaluated by the Project and by Agrecovery as being very successful and farmer feedback was particularly strong. The combined total waste collected from the events was:

- 5,000 kg of agrichemical containers and drums.
- 2,782 kg of unwanted agrichemicals.
- 5,342 kg of unwanted oil.
- 2,030 kg of fertiliser bags.
- 4,000 kg of silage wrap.

In total, 87 registered participants contributed approximately 19,100 kg of waste products for diversion from potentially harmful disposal practices.

A survey was undertaken with participant farmers and gave the following information:

- Every interviewed attendee liked the idea of a 'One-stop Shop' approach to rural recycling. Most attendees were strong in their support for the idea and stressed the importance of making the events regular.
- Attendees were from a range of farm types, with the majority being from dairy farms.
- By far the majority of those that attended events were the farm owner rather than farm workers.
- Most farmers travelled about 30 minutes to attend the events, but some travelled as much as two and a half hours.

- Most attendees said they participated in the event based on a commitment to recycling and a desire to clear out stored waste. A number noted that they had been waiting for some time for such an opportunity.
- 70% of attendees said they would like to have been able to drop off soft plastics at the events if such a service was offered.

Following the successful pilots, the Project incorporated feedback and completed a detailed service design for the 'One-stop Shop' model, including:

- *Model configuration* – how on-farm collections, pop-up recovery events and fixed collection points should work, and work together.
- *Critical partner roles* – how the service provider, waste contractors, rural retail stores, territorial local authorities and farming sector organisations will need to work together to make the model successful.
- *Marketing and community engagement* – how the model should be publicised and how existing rural networks can be tapped into to ensure high participation rates.
- *Customer interaction* – how the model should maintain a focus on innovation and continuous improvement and ensure a constant connection with customers to ensure farmer needs are met.

Ultimately, the Project reached a number of conclusions regarding alternative waste services, including that:

- Farmers are already motivated to protect the land.
- Service uptake depends on flexibility in cost and convenience.
- Waste should be dealt with all at once.
- Solutions need to be designed around farmers.
- Waste end-market sustainability is the key threat to service viability.

This last point, which places an emphasis on finding domestic outlets for wastes collected, has become even more prominent since the conclusion of the Project.

Without stable and sustainable end-markets for wastes collected, particularly around soft plastics, any efforts to enhance and refine service delivery will be fruitless. Without viable on-shore solutions for plastic recycling, there is a real risk of losing the momentum gained during this project, and any improvement in farmer engagement and behaviour change may be lost and difficult to recover. Providing customer-centric, efficient and well-designed services to ensure farm wastes are not buried, burned or bulk stored will only make a lasting impact if revenue can be reliably earned from the sale of collected wastes.

Implementation

Following the successful pilot events, Agrecovery expressed an intention to implement the model based on its articulation in the final New Zealand Rural Waste Minimisation Project Report, which was completed in June 2018.

To support this plan, Agrecovery applied to the Ministry for the Environment's Waste Minimisation Fund (WMF) for funding to initiate deployment of the 'One-stop Shop' model over two years, commencing in early 2019. Agrecovery is confident the funding will be made available and implementation of the model will proceed as indicated.

Agrecovery noted in the application that it is a "strong advocate for this model, and seeks support to implement it for the benefit of New Zealand farmers and growers and growers, and the environment. Agrecovery will seek, where possible, to implement a product stewardship approach to additional waste streams by partnering with producers to internalise waste processing and collection costs into product costs".

Agrecovery intends to implement the model in two phases:

1. *Service Design Finalisation and Partner Engagement*: The first year of the model deployment will focus on building the contractual relationships, partnerships and systems necessary to launch the new model. Services will be piloted throughout the year to 'live test' the model. During this phase, Agrecovery will ensure that all contracts are in place for waste handling and collection, and that stable end-markets are in place for all waste streams to be included in the model. Partnerships with Territorial Local Authorities will also be key.

2. *Service Implementation:* The second year will be focused on commencing a rolling deployment of new services on a regional basis. New Zealand has in excess of 53 districts, and that it will certainly take years to roll out services to all of these districts. Therefore, a regional deployment strategy will need to be carefully crafted.

By implementing the 'One-stop Shop' model Agrecovery aims to deliver strong and sustainable benefits for farmers and growers, and for New Zealand.

Farmers and growers will benefit from access to a single point of contact for the off-farm management of all major non-natural commercial farm wastes. They will also enjoy flexibility in service provision, with access to on-farm collections or drop-off sites. Agrecovery also plans to set service costs that will offer considerable savings over incumbent service providers, even at higher levels of service. This is driven by lower costs of operation through economies of scale, rationalised on-farm collection logistics, and greater use of centralised waste collection points. Better use of technology and a move towards online communications and automation should also lower operational costs.

New Zealand as a whole will benefit from the diversion of a range of rural wastes from burning, burial or bulk storage, resulting in better community and environmental outcomes. This is particularly relevant in terms of hazardous and potentially hazardous wastes. Implementation of the model will also increase rural community awareness of, and focus on, responsible waste management and diversion.