Synthetic Refrigerant Stewardship Milestone 4: Report 1

Guiding principles for preferred industry stewardship solution

This scoping report has been prepared by the Synthetic Refrigerant Stewardship Working Group as part of a process to develop an industry led product stewardship programme for synthetic greenhouse gas refrigerants in New Zealand.

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Document Control and Sign Off

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1. INTRODUCTION

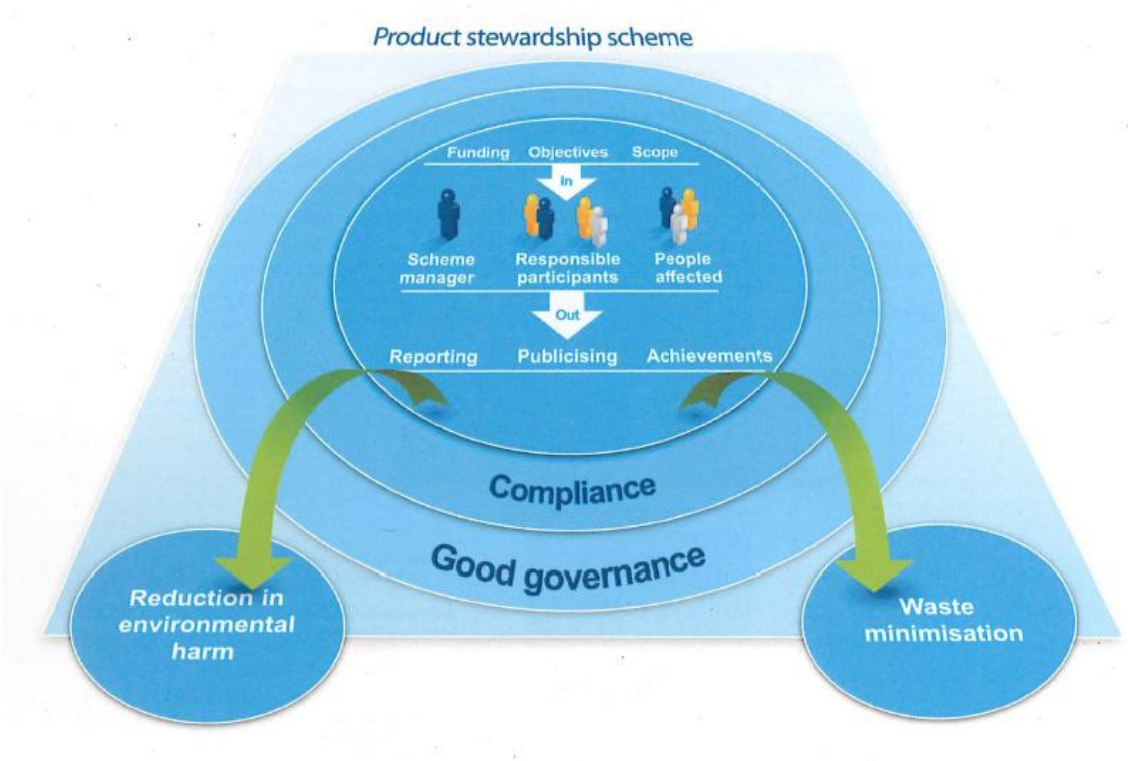
1.1. What is Product Stewardship?

Product stewardship is a “cradle to cradle” methodology that helps reduce the environmental impact of manufactured products. Under product stewardship schemes (PSSs), producers or manufacturers, brand owners, importers, retailers, consumers and other parties accept responsibility for the environmental effects of their products – from the time they are produced until the end of their useful life and are recycled or disposed.

There are many definitions of product stewardship, but the one of most relevance to New Zealand industry is that provided in Part 2 of the Waste Minimisation Act 2008, which states:

The purpose of this Part is to encourage (and, in certain circumstances, require) the people and organisations involved in the life of a product to share responsibility for:

> *(a) ensuring there is effective reduction, reuse, recycling, or recovery of the product; and*
> *(b) managing any environmental harm arising from the product when it becomes waste*.



Product stewardship scheme participants take responsibility for the environmental effects of their products and take these costs into account when making decisions about the production, purchase and disposal of their products. This means more efficient and responsible use of resources, rather than dealing with the waste problem at the point the product is thrown away. For some products where they pose a high risk to the environment or human health the PSS may focus on improving the management and ensuring appropriate disposal over recycling and reuse.

There are many ways that stewardship for synthetic refrigerants (SR) could be achieved for New Zealand and these will have their advantages and disadvantages. This document outlines the guiding principles developed by the industry stewardship working group.

1.2. Current status quo

The current situation for the stewardship of refrigerants is mixed and varied. There is a single product stewardship scheme operating in NZ. RECOVERY is a voluntary scheme that is accredited by the Ministry for the Environment under the Waste Minimisation Act 2008.

RECOVERY is funded by a fee that is paid by the majority of bulk SR importers. This fee funds the aggregation, transport and disposal of SR deposited at specific locations around the country. The service is free to all holders of SR regardless of whether the producer or holder has paid the advanced disposal fee to RECOVERY.

We are not aware of any other organisations that collect SRs for destruction. This is not surprising given the free disposal that RECOVERY currently provide. However, the reuse of SR removed from decommissioned refrigeration equipment does occur.

A detailed situational analysis of the current regime for SRs in New Zealand may be found in the Working Group's first report.[1]

1.3. Import and Export

SRs are not developed and produced within New Zealand and therefore, all SRs be they in bulk or within refrigerant containing equipment, are imported into New Zealand. Some of this imported product is then exported to other countries either in pre-charged equipment or as bulk refrigerant.

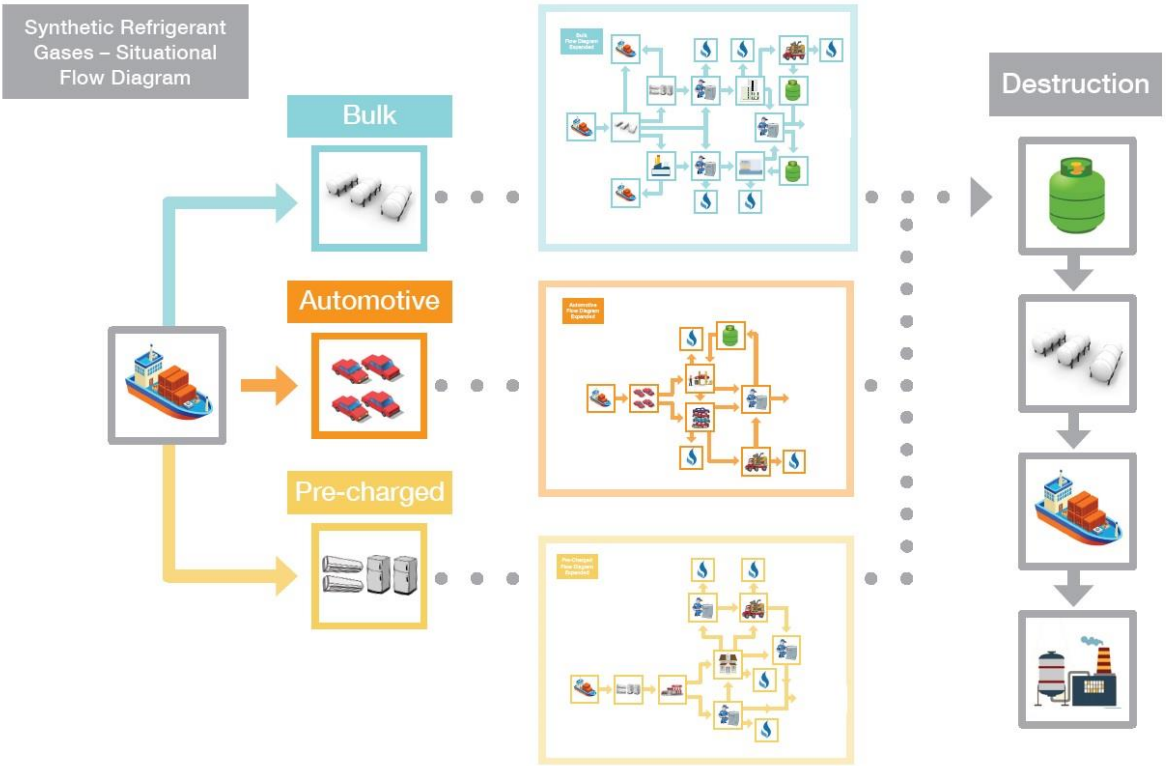


Figure 1 Graphical representation of the three main import streams of SGG refrigerants.

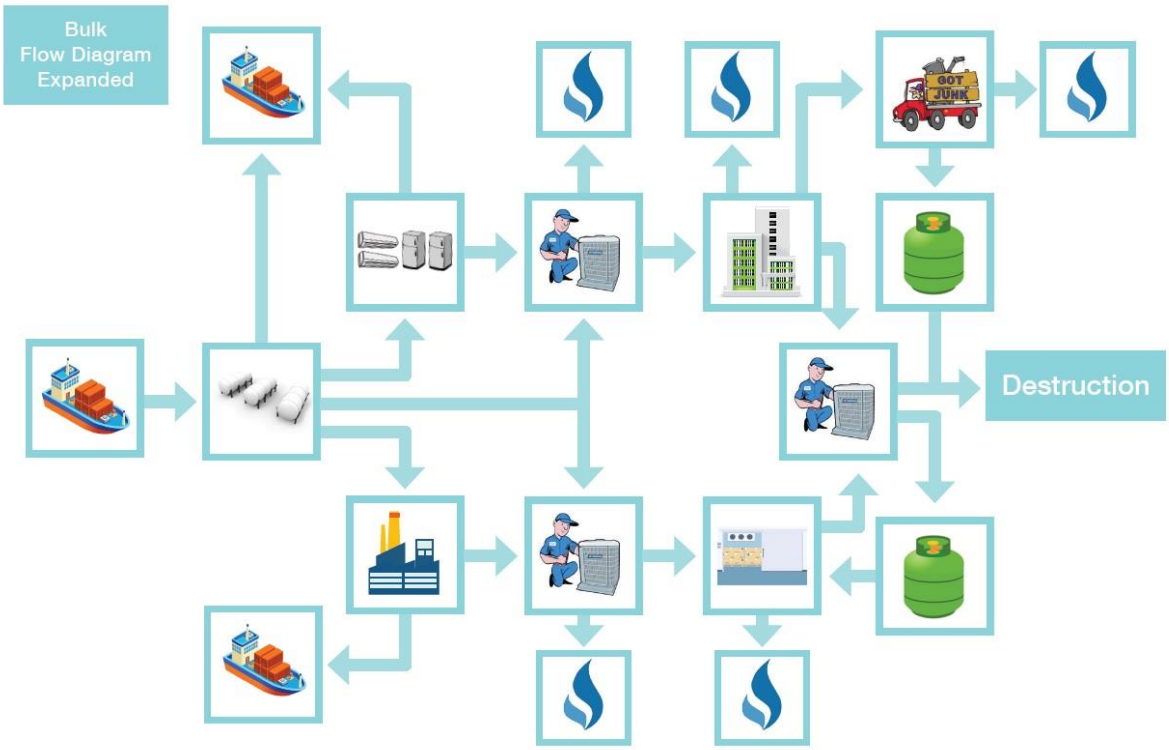


Figure 2 Graphical representation of the life of bulk refrigerants.

Imported goods such as air conditioning units, fridges and freezers and dehumidifiers are pre-charged with SRs. Those that contain Global Warming Potential (GWP) gases are required to pay a levy to the government managed Emissions Trading Scheme (ETS).

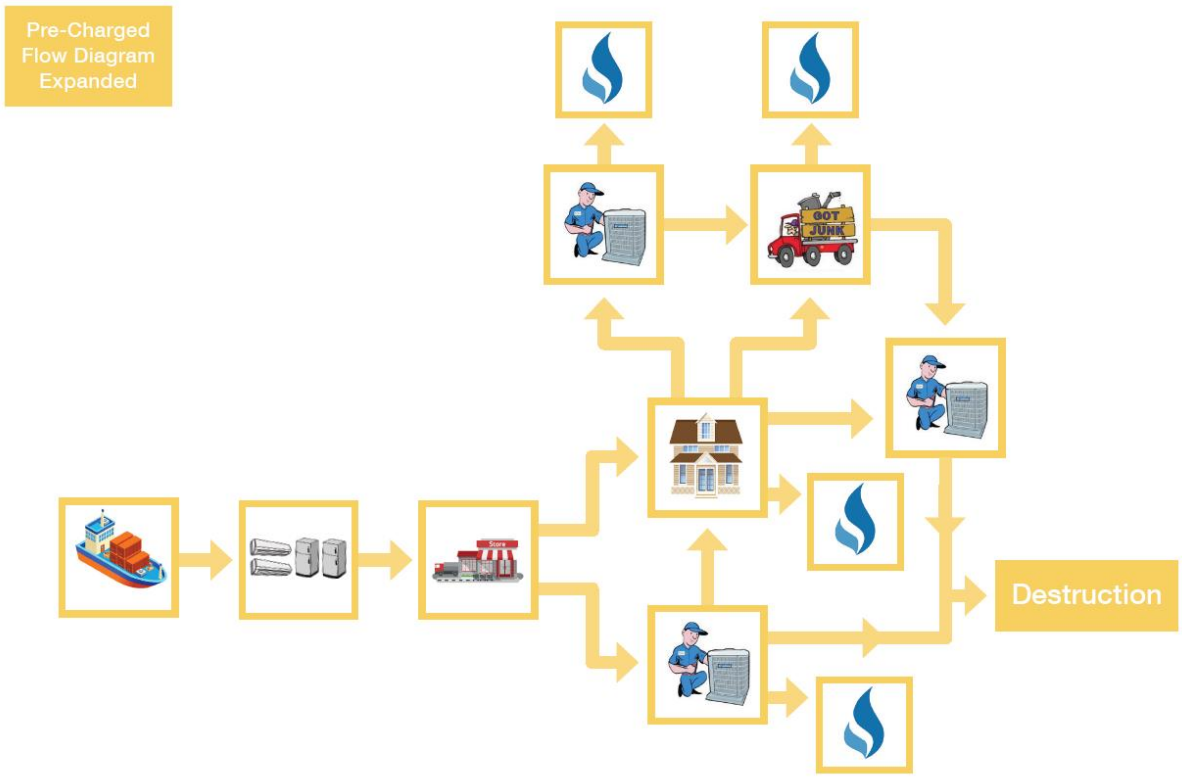


Figure 3 Graphical representation of the life of SGG refrigerants in pre-charged goods.

The importer (or registrant in the case of vehicles, see below) pays this based on the number of units and the SRs' GWP potential, the higher the GWP, the higher the levy paid to the ETS. This levy tends to be passed onto the consumer within the purchase price.

Motor vehicles will have SR refrigerants within their air conditioning units. They are required to pay a levy at the point of registration. The Climate Change (Synthetic Greenhouse Gas Levies) Regulations 2013 determines how much they pay based on the price of carbon and the GWP of the refrigerant. If a vehicle is not registered to be driven on NZ's roads, then no ETS levy is collected.

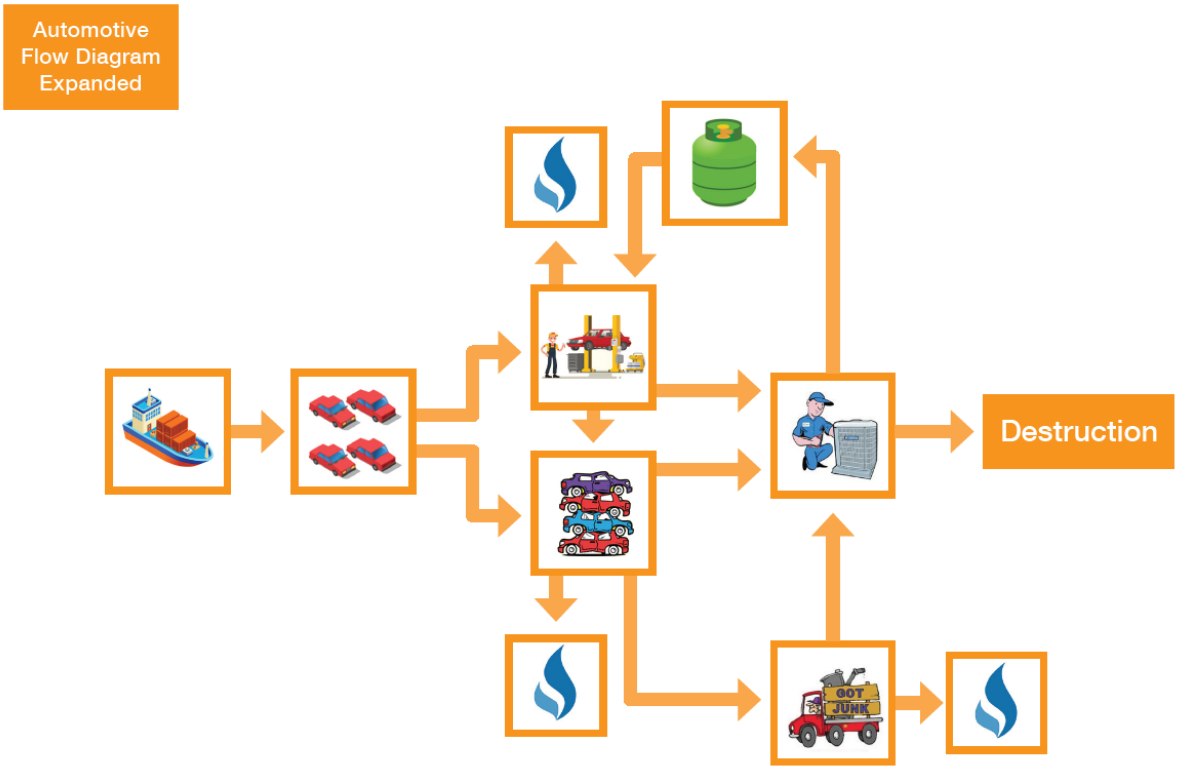


Figure 3 Graphical representation of the life of SGG refrigerants in motor vehicles.

Bulk imports, which can be individual SRs or more likely blends of different SRs are required to surrender New Zealand Units (NZU) under the ETS when imported into the country[2]. The value of the NZUs surrendered is calculated based on the amount of SR imported and its GWP.

1.4. Manufacture of refrigerant and or equipment

As discussed above there is no onshore production of refrigerants in NZ. However, there is the production of equipment and goods that contain refrigerants which are sold both within NZ and overseas.

SRs that are exported either in bulk or in equipment receive ETS NZU

1.5. Sale

SRs are sold within NZ wholesale in bulk, within imported pre-charged goods and motor vehicles or NZ manufactured goods. These sales are carried out by a multitude of different organisations in different sectors and at different locations around the country. They can be direct to the public or through third party retailers.

Participants of RECOVERY pay either $1.5 or $2.5 per kilogram (based on the hazardous properties of the refrigerant) to RECOVERY to cover the costs of disposal at the end of its life. This fee is paid based on the amount of refrigerant sold into the NZ market.

1.6. Equipment Servicing, Installation and Use

Almost every property or vehicle, be it commercial or domestic, has equipment that contains SRs. The installation of many of these is not currently required to be carried out by an appropriately trained

and qualified technician. Therefore, there are poor installations that leak these GWP SRs to the atmosphere.

Given the wide and varied uses for SGG refrigerants there is a wide variety of organisations and individuals who would service and maintain the equipment that contain them. These individuals and organisation have varying levels of training and experience ranging from none to highly skilled. This poses a significant risk of unintentional leaks through poor work and a lack of training.

It is considered within the industry that a significant amount of leakage of SRs occurs due to poor installation and maintenance.

1.7. Recycling/reuse

SRs that are removed from equipment can be a mixture of different refrigerants and be contaminated with other chemicals. For these SRs to be used in other equipment it is sometimes necessary for them to be reprocessed to remove these contaminants and then separated into their different SRs so they can then be recombined at the correct ratios for their next use. To the best of our knowledge, there is no one providing this service within New Zealand

Reuse (where little or no reprocessing occurs) of SRs does currently take place in New Zealand. This tends to happen when the owner of larger refrigeration units upgrades one unit and keeps the SR from the decommissioned unit so that it can be used in their remaining units that may require topping up due to leakage.

It can also happen in the motor vehicle sector where SRs are removed from one vehicle and used in another or reused within the same vehicle.

1.8. Training and qualifications

There are four refrigerant industry organisations that offer support and training to refrigeration technicians working with SR:

- Institute of Refrigeration Heating and Air Conditioning Engineers (IRHACE)
- Refrigerant License New Zealand (RLNZ)
- Climate Control Companies Association (CCCA)
- Refrigeration Professionals Guild of New Zealand (RPGNZ)

A Level 4 Refrigerant and Air Conditioning Trade Certificate is available to qualifying industry trained apprentices. Administered by the ITO Competenz, the course focuses on on-job training with off job block courses all held at Manukau Institute of Technology.

Separately, Unitec offer a short course in Automotive Air Conditioning Installation and Servicing.

There is currently no formal license for refrigerant technicians. Training for an Approved Filler License for Refrigerants is carried out in NZ by training organisations such as Refrigerant License New Zealand and whilst there is a requirement to be suitably qualified for certain activities associated with the installation and decommissioning of SGG refrigerant containing equipment this is not necessary for all aspects of the SGG refrigerant's life cycle. Certification for the Approved Filler License is administered by Worksafe under the Health and Safety at Work Act.

1.9. Disposal

RECOVERY is a Charitable Trust (Trust for the Destruction of Synthetic Refrigerants) that has been operating since 1993 and was established to provide a disposal option for ozone depleting refrigerants. It is now focused on providing a disposal option for GWP SRs and is governed by representatives from key refrigerant stakeholders such as the dairy, grocery, wholesalers, importers, refrigerant engineers and motor vehicle sectors.

RECOVERY is the only nationwide product stewardship scheme for SGG refrigerants. It is funded by a fee that is paid by participating bulk importers at the time of sale of the refrigerant. The fee is based on the kilogrammes of SR sold, which is reported in confidence to Price Waterhouse Cooper (PWC) who aggregate the data for reporting. As it is a voluntary scheme there are no audits carried out to validate the data provided. All funds are managed by PWC.

Not all bulk importers participate in the scheme and none of the pre-charge importers do. It is therefore estimated that approximately only 48% of the refrigerants sold directly or indirectly in New Zealand have a fee paid to enable their safe destruction by RECOVERY. However, due to the nature of refrigerants and the inability to identify the original importer of a refrigerant when presented for destruction, RECOVERY accept all SRs for disposal.

There are two levels of fees: the standard rate is $1.50 per kilogram and a higher rate of $2.50 per kilogram for refrigerants with flammable properties. The higher level is due to the additional handling and disposal costs that are required for flammable SRs.

RECOVERY contract Patton NZ to receive, consolidate and ship unwanted SGG refrigerants first to Auckland and then to Australia where they are destroyed using plasma arc technology. Patton NZ have three main reception hubs, Auckland, Wellington and Christchurch, where holders of SRs can take them for safe disposal. Outside of these centres there is the ability to go to a regional Patton NZ office and have the cylinders couriered to the three main locations or the holder can courier the cylinders themselves.

When the consolidated shipment is received in Australia it is analysed before being destroyed. This analysis details the composition of the gas destroyed outlining the SGG refrigerants and concentrations. This information is used by RECOVERY to claim ETS NZU credits for destroying the GWP refrigerants.

Once the consolidated refrigerants have been destroyed in Australia the empty cylinders are returned by ship to Auckland where they are redistributed back to either the Auckland, Wellington or Christchurch Patton NZ branches. This process of shipping cylinders to and from Australia can take a significant amount of time as RECOVERY are required to wait until they have sufficient volume for a full shipment, then space on a ship, time allocated for destruction and space on a ship for the return trip. This can result in a lack of cylinders for consolidation and a backlog developing at the Patton NZ hubs.

This issue could be improved by obtaining more cylinders (which RECOVERY has recently done) or by there being a local onshore destruction option, which is currently not available.

2. WORKING GROUP'S GUIDING PRINCIPLES

2.1. Overview

The Working Group with representatives from all major sectors has considered the various options for SR PS and have determined that the structure given below in Figure 5 is the most likely to deliver an effective and efficient PS for SR for New Zealand.

This comprises a single Product Stewardship Organisation (PSO) that contracts the service delivery functions of the PS scheme.

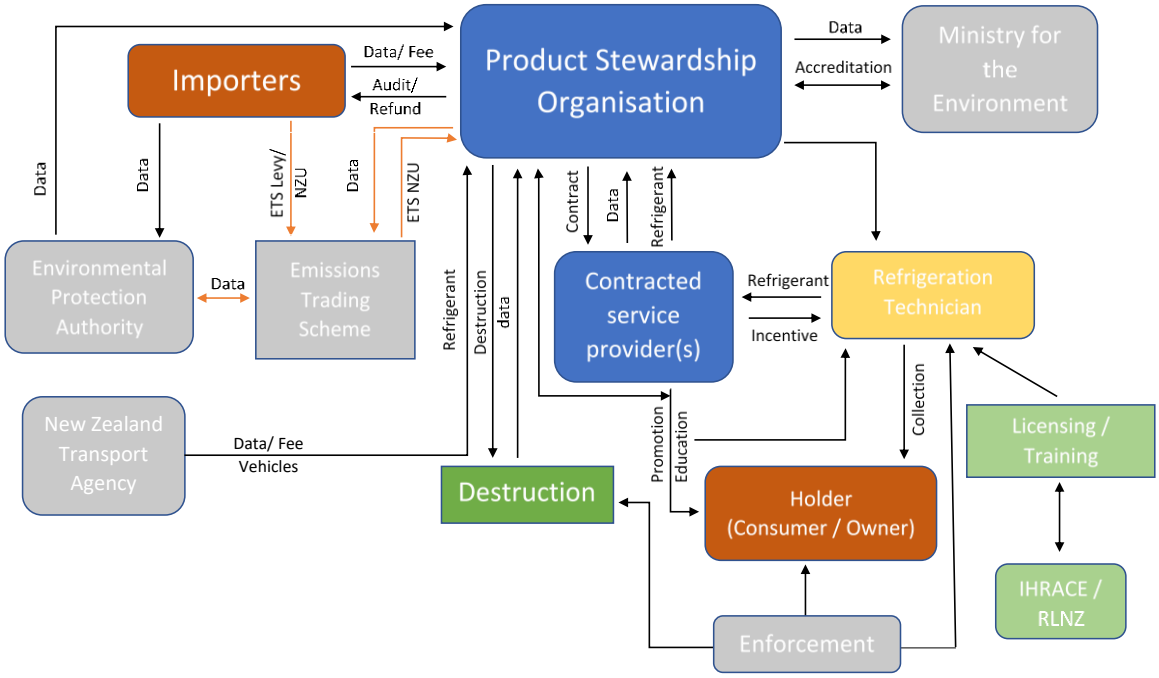


Figure 5 Graphical representation of the preferred structure for SR product stewardship within NZ.

This section outlines the main guiding principles that have been agreed by the Working Group. Where consensus has not been achieved then this is noted with each part.

2.2. Number of Product Stewardship Organisations

There should be only one Product Stewardship Organisation (PSO) which may contract multiple service providers.

There should be one single brand for the scheme. However, delivery and key messages may be targeted according to the potential audience.

2.3. Refrigerant ownership and management

The PSO will maintain ownership of all collected refrigerant.

This is considered important to ensure the ETS New Zealand Units (NZU) received from the destruction of GWP SRs are used to fund the scheme and improve cost efficiencies with consolidation and export for destruction.

2.4. Product Stewardship Organisation governance structure

The Working Group consider that the governance structure of the PSO should comprise of 6-8 members with 1 representative from each of the following stakeholders:

- Large scale holders/customers
- Refrigeration sector/suppliers
- Precharged suppliers
- Automotive
- Installation & service contractors
- Refrigeration industry associations
- Independent professional chair with no conflicts/interests (experience in business admin/environmental)

There is no government representative on the board, but government is considered to play an important monitoring role.

The governance body will have ultimate responsibility for the decisions made on behalf of the scheme (the day to day operations and decisions may be contracted to a third party)

The governance body would need to have the following skills amongst its members:

- Financial
- Health, Safety and Environment.
- Regulatory
- C-suite/ governance experience
- Operational/contract experience
- Communication
- Logistics
- Industry specific technical skills

Governance terms/recruitment:

- The term for each board member will be a maximum of three years.
- A board member may re-stand for selection.
- A board member can serve no more than three consecutive terms.
- Two board members will stand down each year, to ensure continuity and retention of institutional knowledge. However, the for the initial board, all members will serve the full 3 years and then the rotation will commence. Which of the board members will stand down first will be determined in a fair and equitable way by the board during their first term.
- Each sector group (outlined above) nominates representatives (2-3) – nominees that must meet fit and proper person and required skills.
- If there are no suitable candidates from a specific sector, then the empty position may be filled by one of the other sectors for a 1 year term.
- The board will aim to have a diverse membership.
- Selection committee manages objective review of nominees. They may use an external recruiter.
- The board will select an experienced independent chair

- The board positions should be paid, but the amount should not be exorbitant.

2.5. Incentive to SR holders to participate in scheme

The majority of the Working Group consider that some form of incentive needs to be applied to encourage participation. However, agreement on what these incentives should be could not be reached so it was considered most appropriate for this to be left to the PSO governance body to decide what these specific incentives are, their size and application.

2.6. Scope of scheme (WMA S14 b)

The SRPS will include:

All gases used for heating, cooling and air conditioning that are ozone depleting substances under the Ozone Layer Protection Act 1996 and/or synthetic greenhouse gases under the Climate Change Response Act 2002, and synthetic refrigerants (such as HFOs) and products containing these gases [1]

SF6 is a significant GWP synthetic gas but is not currently included in the scope as it is not a refrigerant. However, the Working Group recognises that the PSO may be the most appropriate body to handle their export and destruction. It is understood that the electricity generation and distribution sectors do not want SF6 declared a priority product.

Given that the Working Group recognises that the PSO could be the most appropriate body to handle the collection and destruction of unwanted SF6 there is the potential for SF6 to be included in the scheme in the future, if it is declared a priority product, and the electricity generation and distribution sectors wish to join the scheme.

2.7. Point to apply the Advanced Stewardship Fee (ASF)

Given that not all SR are imported by one industry sector it is not practicable to apply the Advanced Stewardship Fee at the same point. The Working Group consider that these are the most appropriate places to apply the ASF.

Bulk SRs and equipment precharged with SR are to be declared to the PSO at point of import. Payment of the ASF will be made at a later date, the terms of which will be determined by the PSO.

Note: Exported virgin bulk SR and unused SR precharged equipment (including new NZ manufactured equipment containing SR) will be declared to the PSO at time of export and the ASF will be credited/ refunded.

The ASF for motor vehicles will be applied at the point of registration and collected by the New Zealand Transport Agency (NZTA). This will require some regulatory changes to enable NZTA to

[1] Definition taken from the Ministry for the Environment document "Proposed priority products and priority product stewardship scheme guidelines: Consultation document"

act as a collection agency but there is precedent for this as they currently collect the SGG levy that is applied to vehicles under the Emissions Trading Scheme (ETS).

However, only vehicles that are to be driven on public roads are required to be registered with NZTA, those that are solely off-road vehicles are not. Many of these vehicles would not contain air conditioning units and so would not have SR or be required to pay an ASF. It is also considered that they would be small in number relative to those that are required to register. The PSO once established will decide whether the cost to identify and charge the ASF to these vehicles is too great when compared with the fee that will be received. This will also be an issue for other motor vehicle PSOs so there is the potential to collaborate to reduce costs.

2.8. Focus of the scheme

The PS scheme will only destroy collected synthetic refrigerants, there will be no reuse or recycling undertaken by the scheme. It was considered that this will and is being undertaken by the industry and there is no requirement for the PSO to undertake this role.

2.9. Out of scheme exports

For used synthetic refrigerants not in the control of the scheme the working group considers that they must not be exported for reuse or recycling given the potential threat to the environment.

Therefore, the WG considers that controls must be placed on these exports to ensure that they are only exported for destruction. Without proof of appropriate destruction it is considered that there should be no ETS NZUs paid to the exporter.

WMA S23 (1) (a) enables the Governor General, at the recommendation of the Minister to make regulations for the purpose of:

"Controlling or prohibiting the disposal, or anything done for the purpose of disposing, of products or waste:"

With this ability the Working Group recommends that the Minister prohibit:

> the export of used SR unless the exporting parties are an accredited SR product stewardship scheme and that the SR is to be sent for destruction at a facility by UNEP approved technology.

Note: The export of SRs that are part of a system such as the air conditioning unit of a vehicle or refrigerator should be excluded from this control.

2.10. Classes of Person (WMA S14 (d))

The WG consider that the following classes of persons are essential for the success of a SR PSS. They are:

MINISTRY OF THE ENVIRONMENT: Product Stewardship Accreditation body, monitors targets and effectiveness of the scheme

GOVERNMENT AGENCIES: Customs and New Zealand Transport Agency who collect the Stewardship Fee for vehicles

BULK SYNTHETIC REFRIGERANT IMPORTERS (Producer): Importers of SR that are in single containers and not contained within refrigeration equipment.

PRECHARGED EQUIPMENT IMPORTERS (Producer): Importers of new and used equipment that contains Synthetic refrigerants

VEHICLE IMPORTERS (Producer): Importers of new and used motor vehicles as detailed in the Land Transport Act and that contain synthetic refrigerants

SYNTHETIC REFRIGERANT CONTAINING EQUIPMENT MANUFACTURER (Producer): Produce refrigeration equipment within New Zealand and charge it with Synthetic refrigerants for sale within NZ and/or overseas.

INDUSTRY ASSOCIATIONS: Organisations that represent professionals working in the refrigeration sector and provide services such as training and education.

ANY OTHER PERSON: Purchase or export bulk SR or SR containing equipment.

REFRIGERATION TECHNICIANS/ ENGINEERS: Trained and qualified technician/ engineer that installs, services and removes SR and/or SR containing equipment.

COLLECTION SITE: A place where Refrigeration Technicians/Engineers can drop off unwanted SR.

COLLECTOR: Collects SR from holders of SR.

TRANSFER STATION: A building or processing site for the temporary deposition of waste.

LANDFILL SITES: a site for the temporary processing or storage of waste materials or disposal by burial.

AUTOMOTIVE TECHNICIAN: A vehicle technician that services vehicle air conditioning units

AUTOMOTIVE Dismantlers: A business that breaks vehicles down into parts for resale/ recycling or recovery.

SCRAP METAL MERCHANTS: A business that processes SR containing vehicles and/or equipment to sell the metal component parts.

2.11. Scheme's Expiry Date (WMA S14 (g))

The current voluntary accredited product stewardship scheme process requires the declaration of a scheme's expiry date. However, the WG recognises that this is not possible at the present time for SR and considers that the scheme does not have an expiry date. It will stay in place so long as stewardship of synthetic refrigerants is required.

The accredited mandatory Synthetic Refrigerant Product Stewardship Scheme will start upon written notification of successful accreditation of the programme by the Minister and expires seven (7) years after that date.

2.12. Scheme Requirements

The Working Group considers that the following will be mandatory requirements of the accredited scheme.

2.12.1. The Synthetic Refrigerant Product Stewardship Organisation (SRPSO):

The Scheme will:

- collect data from the producers about the net amount of synthetic refrigerants they have imported, (the data format and timeframes will be consistent with that provided to the EPA for the ETS)
- validate the scheme members declarations with the data held by the EPA, NZTA and or NZ Customs.
- set and collect an advanced stewardship fee (based on a dollar per kilogram amount) to be paid by those parties that commercially sell synthetic refrigerants and or synthetic refrigerant equipment.
- refund any fees collected on synthetic refrigerant that are exported from New Zealand in newly manufactured or unused synthetic refrigerant containing equipment or bulk synthetic refrigerant.
- report progress in disposing of synthetic refrigerants to the MfE.
- only use personnel for the collection and management of synthetic refrigerants who can safely demonstrate appropriate training, qualifications and registration
- only accept synthetic refrigerants from third parties who are participants (producer) of the scheme or individuals who can safely demonstrate appropriate training, qualifications and registration.
- promote and incentivise participation with the scheme to maximise the collection of synthetic refrigerants including potential financial incentives.
- maintain records of who has deposited synthetic refrigerants for destruction, this can include, individual's name, the business name and contact details, their licence ID number and the time, date and amount deposited.
- report at least annually, the amount of synthetic refrigerants destroyed
- continue to destroy all synthetic refrigerants collected until such time as they can show that the significant majority of synthetic refrigerants being collected consist of primarily of low global warming synthetic refrigerants and recycling and reuse is a better option than destruction.

2.12.2. Wholesalers and retailers of bulk synthetic refrigerant

- must be a member of the Synthetic Refrigerant Product Stewardship Scheme (SRPSS) and operate in accordance with its requirements
- must provide data on the type and quantity of unused bulk synthetic refrigerants they have imported and exported (the data format and timeframes will be consistent with that provided to the EPA for the ETS levy) to the Synthetic Refrigerant Product Stewardship Organisation (SRPSO) quarterly or as determined by the SRPSO
- must pay the advanced stewardship fee(s) set by the SRPSO.
- must maintain records of synthetic refrigerants imported, exported and sold. This shall include all the details requested by the SRPSO.
- must only sell bulk synthetic refrigerant to a company that is a member of the SRPSS or to an individual that can safely demonstrate appropriate training, qualifications and registration (as determined by the SRPSO)
- must dispose of unwanted synthetic refrigerant through the SRPSS

2.12.3. Wholesalers and retailers of pre-charged synthetic refrigerant containing equipment

- must be a member of the SRPSS and operate in accordance with its requirements
- must provide data on the type and quantity of unused synthetic refrigerant they have imported and exported (the data format and timeframes will be consistent with that provided to the EPA for the ETS levy) to the SRPSO quarterly or as determined by the SRPSO
- must pay the advanced stewardship fee(s) set by the SRPSO.
- must maintain records of synthetic refrigerants imported, exported and sold. This shall include all the details requested by the SRPSO.
- must only sell within New Zealand split systems that require wiring and pipework installation, to:
    - a company that is a member of the SRPSS, or
    - an individual that can safely demonstrate appropriate training, qualifications and registration (as determined by the SRPSO), or
    - an individual that is not appropriately licenced where the wholesaler/retailer is undertaking the installation themselves using an individual that can safely demonstrate appropriate training, qualifications and registration, or
    - an individual or company where they have contracted a third party to undertake the installation, who can safely demonstrate appropriate training, qualifications and registration.
- must dispose of unwanted synthetic refrigerant through the SRPSS

2.12.4. Manufacturers of synthetic refrigerant containing equipment

- must be a member of the SRPSS and operate in accordance with its requirements
- must provide data on the type and quantity of unused synthetic refrigerant they have imported and exported (the data format and timeframes will be consistent with that provided to the EPA for the ETS levy) to the SRPSO quarterly or as determined by the SRPSO
- must pay the advanced stewardship fee(s) set by the SRPSO.
- must maintain records of synthetic refrigerants imported, exported and sold. This shall include all the details requested by the SRPSO.
- must only sell (within New Zealand) synthetic refrigerant containing systems that require on-site installation of wiring and interconnecting pipework (Self-contained units that do not require on-site installation of wiring or inter-connecting pipework are exempted from this requirement) to:
    - a company that is a member of the SRPSS, or
    - an individual that can safely demonstrate appropriate training, qualifications and registration (as determined by the SRPSO), or
    - an individual where the wholesaler/retailer is undertaking the installation themselves using a person(s) who can safely demonstrate appropriate training, qualifications and registration (as determined by the SRPSO), or
    - an individual or company where they have contracted a third party to undertake the installation who can safely demonstrate appropriate training, qualifications and registration (as determined by the SRPSO),
- must dispose of unwanted synthetic refrigerant through the SRPSS

2.12.5. Installers of synthetic refrigerant containing equipment

- must be a member of the SRPSS and operate in accordance with its requirements
- must pay the appropriate registration fee(s) (if any) set by the SRPSO.
- must maintain records of synthetic refrigerant containing equipment installed. This shall include all the details requested by the SRPSO.
- must only sell (within New Zealand) synthetic refrigerant containing systems that require on-site installation of wiring and interconnecting pipework where they are undertaking the installation themselves using an individual who can safely demonstrate appropriate training, qualifications and registration. Self-contained units that do not require on-site installation of wiring or inter-connecting pipework are exempted from this requirement.
- must only use appropriately licenced individuals to install, service and decommission split systems or other synthetic refrigerant containing equipment that require wiring and pipework installation.
- must dispose of unwanted synthetic refrigerant through the SRPSS

2.12.6. Dismantlers and recyclers of synthetic refrigerant containing equipment

- must safely remove any synthetic refrigerant prior to dismantling, crushing or disposing of synthetic refrigerant containing equipment or products.
- must only use individuals or companies to remove synthetic refrigerant from synthetic refrigerant containing equipment or products who can safely demonstrate appropriate training, qualifications and registration.
- must dispose of unwanted synthetic refrigerant through the SRPSS
- must maintain records of synthetic refrigerant disposed of through the SRPSS.

2.12.7. Scheme receiver of unwanted synthetic refrigerant

- must only accept unwanted synthetic refrigerant from an individual who can safely demonstrate appropriate training, qualifications and registration or a company that is a participant (producer) of the SRPSS.
- must maintain records (as required by the SRPSO) of the synthetic refrigerant accepted (if known), the amount, the sector that produced the synthetic refrigerant (if known), the details of the individual and (if applicable) the company that disposed of the synthetic refrigerant and anything else requested by the SRPSO.
- must only use individuals who can safely demonstrate appropriate training, qualifications and registration, for the handling, aggregation, storage and consignment of collected synthetic refrigerant.

2.13. Alternative positions by Working Group members.

2.13.1. Requirement to be able to prove current competence.

The representatives on the Working Group from the Imported Motor Vehicle Industry Association Incorporated (VIA) and the Motor Industry Association Incorporated (MIA) do not consider that automotive technicians should be required to safely demonstrate appropriate training, qualifications and registration when working on a motor vehicles refrigerant containing equipment. However, this view is not held by the representative from the Motor Trades Association (MTA) nor the other members of the Working Group.

2.13.2. Incentives

Some members within the Working Group consider that the scheme will need financial incentives placed on small quantities of unwanted SR in order to encourage participation. Others do not. It

was agreed that this would be a decision of the PSO once established rather than a requirement set by the Working Group.

3. WORKING GROUP RECOMMENDED REGULATORY REQUIREMENTS.

Whilst the requirements of the product stewardship scheme can control many aspects of the management of synthetic refrigerants within New Zealand there are some aspects that need additional regulations to support the scheme and make it the most effective it can be.

Under the Waste Minimisation Act the Minister can recommend regulations in relation to products, materials and waste. This section details the specific regulatory requirements the Working Group considers are necessary for the successful stewardship of synthetic refrigerants.

3.1. Waste Minimisation Act Regulations

The Working Group recommends that the Minister recommend the following regulatory requirements for these specified person(s):

3.1.1. All persons

- prohibit the disposal of waste SR unless it is through an accredited product stewardship scheme
- prohibit the intentional release to the atmosphere of synthetic refrigerants that have been collected for storage, destruction, recycling, reuse or recovery.

3.1.2. All persons, who are decommissioning/dismantling/recycling or recovering equipment or materials that contain, or have contained synthetic refrigerants (such as refrigeration technician, transfer stations, auto dismantlers, scrap metal recyclers etc):

- must safely remove, using a person(s) who can safely demonstrate appropriate training, qualifications and registration the synthetic refrigerants prior to dismantling, crushing or disposing of the equipment or products.
- must safely dispose of any and all collected synthetic refrigerant through an accredited SRPSS.
- must maintain records of the disposal of the synthetic refrigerants, this must include, who they transferred the gases to, the individual's name, the business name contact details, their credentials ID number and the time, date and amount transferred.

3.1.3. Motor Vehicle Importers

- to require all importers of motor vehicles, at the time of registration, to pay an Advanced Stewardship Fee (as advised by the SRPSO) for synthetic refrigerants

3.1.4. New Zealand Transport Agency

- to require the New Zealand Transport Agency to collect the synthetic refrigerant advanced disposal fee and distribute it through whatever appropriate mechanism to the SRPSO

3.2. Other regulatory requirements for an effective scheme that do not appear to be able to be achieved using the WMA

Not all controls that are considered important for a successful synthetic refrigerant product stewardship scheme can be enabled using the Waste Minimisation Act. However, there are other Acts that have regulatory setting abilities that could be used. These are controls that the working group consider should be enabled through other Regulations

3.2.1. Holders of synthetic refrigerants and owners of synthetic refrigerant containing equipment (not including households):

- maintain and service equipment to minimise the risk of leaks and containment failures.
- undertake leak testing of newly installed synthetic refrigerant containing equipment or synthetic refrigerant containing equipment that has partly or fully lost its charge.
- repair or replace synthetic refrigerant containing equipment that has failed a leak test.
- only use technicians individuals who can safely demonstrate appropriate training, qualifications and registration for the installation, servicing and decommissioning of synthetic refrigerant containing equipment.
- maintain records of synthetic refrigerants received and transferred for all refrigerant containing equipment excluding householders.

3.2.2. All persons who are handling, installing, servicing and decommissioning synthetic refrigerant containing equipment or containers

- can safely demonstrate appropriate training, qualifications and registration.
- to maintain records of SGG refrigerants they have used, removed and sent for destruction.

3.3. Regulatory Enforcement

The Working Group also consider it is vital to the success of any scheme that requirements to properly steward synthetic refrigerants from the moment of import to final destruction are fully enforced by the relevant enforcement agencies. Failure to do this will undermine the integrity of any scheme and potentially cause significant damage to the environment.

4. COMPARISON WITH THE GOVERNMENT'S PROPOSED PRIORITY PRODUCTS AND PRIORITY PRODUCT STEWARDSHIP SCHEME GUIDELINES

In August 2019 the Government released the consultation document "Proposed Priority Products and Priority Product Stewardship Scheme Guidelines" which outlined the framework for the codesign of regulated product stewardship schemes.

It comprised two parts, the first declares the priority products being targeted (tyres, agrichemicals, refrigerants, e-waste, farm plastics and packaging). The second sets common guidelines for schemes dealing with those products.

The Working Group has considered these guidelines and compared them to what is proposed. The comparison is given below – the text in *italics* is taken directly from the consultation document.

4.1. Intended objectives and outcomes

Government's expectation

a) *Specify the expected reduction in harm to the environment from the implementation of a scheme and/or the expected benefits from reduction, reuse, recycling, recovery or treatment of the product to which a scheme relates.*
b) *Specify the expected quantifiable waste minimisation and management objectives for the product to which a scheme relates, and the plan to achieve significant, timely and continuous improvement.*
c) *All schemes will be designed to incentivise product management higher up the waste hierarchy in priority order: waste prevention, reuse, recycling, recovery (materials and energy), treatment and disposal.*
d) *For products containing hazardous materials: industry certification and compliance with other legislation for installation or use, maintenance, collection, transport, storage and disposal pathways.*
e) *All schemes will be designed and financed to manage orphaned and legacy products, as well as current products entering the market.*

Working Group's response

a) Synthetic refrigerants can be a significant greenhouse gas and if released to the atmosphere can contribute towards climate change. The proposed training and installation controls, together with a collection and destruction pathway will reduce the unintentional release of these gases and their contribution to climate change.
b) Estimated collection targets range from 25,000kgs in the first year to 50,000kg in year 5.
c) The scheme focuses on the improved use and management of SR and their destruction when unwanted. Reuse and recycling will be and is carried out by the holders of SRs.
d) The scheme has outlined controls for all who purchase, install, maintain and dismantle refrigerant containing equipment. This includes a training and registration/credentials system.
e) Orphaned and legacy products are included in the scheme.

4.2. Fees, funding and cost effectiveness

Government's expectation

a) *The full net costs of collection and management of the priority product (reuse, recycling, processing, treatment or disposal) will be covered by producer and product fees associated with the scheme (eg, 'producer pays' or 'advance disposal fee').*
b) *The impact of more than one accredited scheme and opportunities for maintaining competition should be considered in terms of net cost effectiveness (including monetary and non-monetary costs and benefits).*
c) *Specify plans to manage risk to sustainable scheme income, such as price volatility and leakage of materials into other markets.*
d) *Specify how existing and emerging technologies will be used to help track and manage product or waste throughout the supply chain (eg, bar codes, radio frequency identification (RFID), and block chain).*

Working Group's response

a) Producer and product ASFs together with ETS units received from destruction of the SR will be used to fund scheme.

b) The Working Group considers, given the size of the New Zealand refrigerant sector, only one national scheme would be viable.
c) The PSO will set the ASF based on the costs of collection, destruction and management of the scheme and the moneys received through ETS credits for disposal of GWP SR to ensure a sustainable scheme.
d) SR collected by scheme would be tracked from collection to final disposal.

4.3. Governance

Government's expectation

a) The scheme governance entity will be independent, non-profit and represent producers and wider stakeholders, including public interest.
b) Governance should include wider stakeholders in two types of advisory groups: those including product producers and recipients of product management fees who have technical or supply chain knowledge, and other stakeholders who represent wider community and consumer interests.
c) Structure and accountability of the scheme governance entity will be specified. Clear mechanisms will be implemented to fully control scheme operation, manage non-compliance and report on outcomes.
d) The selection process for scheme directors will be transparent, and scheme governance provisions will follow best practice guidelines for New Zealand.
e) Given the size of New Zealand's population and market, the default expectation will be that either a single accredited scheme per priority product, or a clear platform for cooperation between schemes for efficient materials handling, will be part of the design.

Working Group's response

a) The PSO governance body will comprise of representatives from the various refrigerant sectors and an independent chair. It will be a not for profit organisation and contract out downstream scheme services.
b) The PSO has the ability to establish advisory groups if they are required.
c) The governance body will be accountable to the stakeholders that nominated and elected them to the position. The exact mechanism of this will be developed once the PSO is established.
d) The selection process for scheme directors will be transparent, and scheme governance provisions will follow best practice guidelines for New Zealand.
e) There will be a single PSO with one accredited scheme.

4.4. Non-profit status

Government's expectation

a) Given the prominence of expected net public good outcomes, the default expectation is that all priority product stewardship schemes will be operated by non-profit entities representing key stakeholders.

Working Group's response

a) Proposed PSO would be not for profit but have the ability to contract scheme service providers.

4.5. Competition

Government's expectation

a) *The scheme will clearly provide for transparent, non-discriminatory and competitive procurement processes for downstream services, such as collection, sorting, material recovery and disposal.*
b) *The scheme will ensure that no collectors and recyclers (whether existing, new entrant or social enterprise) are unfairly excluded from participation. This includes making service packages of suitable scale (whether geographically, by material or other measure) to allow both large and small providers to compete fairly.*
c) *Multiple accredited schemes will be considered if the net community and environmental benefit (including cost-effectiveness and non-monetary impacts) is likely to be improved.*
d) *Provision will be made for regular independent audit of agreements among competitors.*
e) *The design process for the scheme will have adhered to guidelines on collaborative activities between competitors as issued by the Commerce Commission, including, but not limited to, applying for collaborative activity clearance from that commission (eg, Commerce Commission, 2018a, 2018b, 2018c and 2019).*

Working Group's response

a) The PSO will contract downstream scheme services which will be undertaken in a clear, transparent, non-discriminatory through a competitive procurement process.
b) The PSO will undertake a fair and competitive procurement process that will not exclude competent service providers.
c) The Working Group considers New Zealand to be too small a market for competing schemes.
d) The Working Group considers New Zealand to be too small a market for competing schemes.
e) This has been complied with to date.

4.6. Stakeholder engagement and collaboration

Government's expectation

a) *The scheme will specify how wider stakeholders will be involved in decision-making by governance group (eg, use of stakeholder advisory groups).*
b) *The scheme will have been designed with the active engagement of stakeholders currently involved in the product end of life (eg, collectors and recyclers).*
c) *The scheme will specify how use of existing collection and processing infrastructure and networks will be maximised and new infrastructure and networks co-designed and integrated between product groups.*

Working Group's response

a) The proposed PSO would have a wide governance group of stakeholders and has the ability to co-opt other parties if it deems necessary.
b) The scheme has been designed with the active engagement of stakeholders currently involved in the product end of life

c) This level of detail has yet to be developed but will be undertaken by the PSO once SR are declared a priority product.

4.7. Compliance

Government's expectation

a) The scheme will have a clear means of enforcing compliance of all participants and reporting liable non-participants to the government enforcement agency.
b) The scheme will have strategies to reduce 'leakage' of higher value end-of-life products (eg, 'cherry picking' of e-waste components by informal collectors).

Working Group's response

a) The PSO will once established develop a robust reporting and disciplinary process that will enable repeat offenders to be excluded from the scheme.
b) There is a request that SR may only be exported for destruction through an accredited scheme to ensure that returned ETS units can be used to fund further collection and disposal.

4.8. Targets

Government's expectation

a) All schemes will be expected to set and report on targets that have the following characteristics:
    - *significant, timely and continuous improvement*
    - *benchmarked against and aspiring to attain best practice recovery and recycling or treatment rates for the same product type in high-performing jurisdictions*
    - *a clear time bound and measurable path to move toward attaining best practice*
    - *targets for new product and market development to accommodate collected materials.*
b) Results against targets will be publicly reported at least annually.
c) Material collection, recovery and disposal rates will be measured against one of the following:
    - *actual trend data, if the scheme has pre-existed as a voluntary scheme*
    - *the average aggregate weight or count of products sold into the market in the previous three reported years*
    - *another specified method where market entry information does not yet exist.*
d) Plans will be specified for review, adjustment and reporting on performance targets preferably annually and no less than every three years, taking account of changes in the market, natural events and technology.
e) A clear distinction will be made between funding arrangements and market capacity to manage both potential high volume legacy and orphaned product collections in earlier years and ongoing continuous improvement of collection rates.
f) Performance targets will include measures for public awareness of scheme participant satisfaction and a record of response by the scheme to concerns raised. This will be made available to scheme auditors.

Working Group's response

a) The PSO will be responsible for setting and monitoring progress towards targets.
b) The PSO will publish results
c) Given the difficulty in measuring the bank of refrigerants and the rate of leakage, trend data would appear to be the most reasonable measure.
d) The PSO will be responsible for review and adjustment of targets as the scheme develops.
e) Legacy and orphaned products will be included, and the funding managed by the PSO.
f) The PSO will measure targets for public engagement.

4.9. Timeframes

Government's expectation

a) The timeframe within which an application for accreditation or reaccreditation of the priority product scheme is expected to be made after declaration of priority product is as follows:
- *priority product categories with existing accredited voluntary schemes (eg, refrigerants, agrichemicals, farm plastics, packaging): within one year from the date of priority product declaration*
- *priority product categories with accreditation proposals that have been developed through a multi-stakeholder consultation process including, as a minimum, producers, local authorities, major users, existing collectors and recyclers (eg, tyres): within one year from the date of priority product declaration or the date of proposal completion, whichever comes later*
- *other priority product categories: within three years from the date of priority product declaration.*

b) Within the accredited seven-year period, at least one full review will be undertaken of scheme costs and effectiveness. The results of reviews and proposed scheme amendments to improve cost effectiveness will be reported via the annual reporting process.

Working Group's response

a) The Working Group has developed a draft application for accreditation.
b) The PSO will be responsible for any reviews and will publish these through their annual reporting process.

4.10. Market development

Government's expectation

a) The scheme will have a research and development budget to develop new recycled products, encourage transition to circular product and recycled product materials design, and cooperate with other stakeholders to enhance onshore infrastructure.

Working Group's response

a) Given the significant GWP of these SR and the current phasedown to lower GWP SR the sole focus of the PSO and scheme at the current time will be the destruction of the unwanted gases. This will be reviewed in the future when it can be shown that the refrigerant bank comprises predominantly low GWP SR.

4.11. Performance standards, training and certification

Government's expectation

a) *The scheme will have clear means for ensuring adequate training and certification of all people recovering and managing a product throughout its life cycle, to ensure best practice in prevention and reduction of harm to people and the environment.*
b) *Any relevant standards for best practice will be referenced in training, supplier accreditation and monitoring (eg, AS/NZS 5377 for e-waste collection and processing). The scheme will participate in the development and revision of relevant standards.*
c) *The scheme will have clear chain of custody arrangements for monitoring processing of materials and reduction of harm, both onshore and offshore, including annual reporting of findings.*

Working Group's response

a) The Working Group under the leadership of IRHACE have developed training and qualification standards for refrigeration technicians and engineers. Regulation for certification/licencing may be required to ensure compliance.
b) See above
c) The PSO and any contracted third party will be responsible for scheme chain of custody and reporting requirements.

4.12. Liability and insurance

Government's expectation

a) *The scheme will have clear chain of custody arrangements for monitoring receipt and processing of materials and reduction of harm, both onshore and offshore, including annual reporting of findings.*
b) *The scheme will ensure that liability of parties is clear for each stage of product and materials handling, and adequate insurance for liability is in place at each stage of the process.*

Working Group's response

a) The PSO and any contracted third party will be responsible for scheme chain of custody and reporting requirements.
b) The PSO will be responsible for ensuring liabilities of all parties is clearly understood.

4.13. Design for environment

Government's expectation

a) *The scheme will contain financial or other incentives for diversion of collected products to highest and best resource use, weighted for applications higher up the 'waste hierarchy' (in priority order: reduction, reuse, recycling or composting, energy recovery, safe treatment and disposal).*
b) *The fees paid by a producer to a collective scheme will, as far as possible, be linked to actual end-of-life treatment costs of their products, such as through variable or modulated fees.*
c) *The scheme will facilitate good communication, feedback and incentives between designers, manufacturers, sales and marketing teams, distributors, retailers, consumers,*

collectors, recyclers and end disposal operators, to inform improved design of products and systems.

d) *The scheme will fund initiatives to improve circular resource use by reducing the 'end-of-life' components of the product(s) and improving design for reusability and recyclability of the priority product(s).*

Working Group's response

a) The PSO will be responsible for these incentives and will develop a scheme to maximise the collection and disposal of available unwanted SR.
b) The PSO will have the ability to vary the ASF and it is anticipated that collected ETS credits will be able to contribute towards the costs of the scheme.
c) The PSO and any contracted third party will be responsible for all communications and incentives.
d) Given the significant GWP of these SR and the current phasedown to lower GWP SR the sole focus of the PSO and scheme at the current time will be the destruction of the unwanted gases. This will be reviewed in the future when it can be shown that the refrigerant bank comprises predominantly low GWP SR.

4.14. Reporting and public accountability

Government's expectation

a) *The scheme will provide for clear, regular and open reporting and communication with stakeholders.*
b) *Annual reports will be made public. These will include measurement of outcomes and achievement of targets, fees collected and disbursed, and net cash reserves held as contingency.*
c) *Provision will be made for regular independent financial, compliance, enforcement and environmental audits of scheme performance.*
d) *Scheme plans will address the following: data availability, especially when several PROs are in competition; materials' traceability; precise definition for data collection and reporting (eg, recycling rates and operational costs).*
e) *The scheme will have mechanisms in place to protect competitive information relating to detailed operational costs (eg, 'black box' data collection by third party with aggregate reporting).*
f) *Scheme performance measures will be harmonised between schemes as far as possible.*

Working Group's response

a) The PSO will be responsible for this
b) The PSO will publish public reports of targets and measures.
c) The PSO will be subject to independent financial compliance assessments
d) The PSO will maintain a black box function for data reporting to maintain confidentiality
e) The PSO will maintain a black box function for data reporting to maintain confidentiality
f) The Working Group considers that given the size of NZ only one PSO and scheme should operate within NZ. However, If more than one scheme is active, consistent measurers and benchmarking will be used.

4.15. Public awareness

Government's expectation

a) *Branding and clear information on how and why the scheme operates will be easily available at point of distribution (intercompany) and purchase (consumer), point of waste product collection and online, and a link to the online information will be on the product or product packaging.*
b) *The scheme will provide for transparent product stewardship fees at point of purchase.*
c) *The scheme will ensure that consumer labelling standards for the product are complied with (eg, under the Hazardous Substances and New Organisms Act 1996 for hazardous substances).*
d) *The scheme will regularly measure and report on public awareness and scheme participant satisfaction, and improvements made accordingly.*

Working Group's response

a) The PSO and schemes will be responsible for branding and engagement.
b) The PSO will ensure producers clearly identify any stewardship fee.
c) The PSO and schemes will be responsible for this, for product under its control.
d) The PSO and schemes will assess engagement to determine effectiveness of any of their behaviour change programmes.

4.16. Monitoring, compliance and enforcement

Government's expectation

a) *The scheme will have a clear means of enforcing compliance of all participants and reporting liable non-participants to the government enforcement agency.*
b) *The scheme will have strategies to reduce 'leakage' of higher value end-of-life products (eg, 'cherry picking' of e-waste components by informal collectors).*
c) *The Government will enforce WMA regulations.*
d) *Revocation of accreditation is possible under WMA section 18 if reasonable steps are not being taken to implement the scheme, and the scheme's objectives are not being met or are not likely to be met within the timeframes outlined in the scheme.*

Working Group's response

a) The PSO will be responsible for monitoring compliance and reporting non-participation.
b) The Working Group considers that SR funnelling of the ETS credits to the PSO rather than the schemes will reduce the likelihood of higher value products being targeted.
c) The Working Group consider it is vital to the success of any scheme that requirements to properly steward SR from the moment of import to final destruction are fully enforced by the relevant enforcement agencies. Failure to do this will undermine the integrity of any scheme and potentially cause significant damage to the environment.
d) The Working Group consider that the PSO and its scheme must be effective and efficient in reducing losses and in the collection and destruction of high GWP SRs and should be held to account by the government.

4.17. Accessible collection networks

Government's expectation

a) *The scheme will provide for an end-of-life product collection system that is reasonably accessible for all communities generating that waste product, whether metropolitan, provincial or rural.*
b) *Collection will be free to the public (fully funded by the scheme) for all products covered by the scheme.*
c) *Collection will be based on the product, not proof of purchase.*
d) *Collections will, as far as possible, share infrastructure and public information with other collection schemes in the area.*

Working Group's response

a) The PSO will be responsible for ensuring holders of unwanted SR have access to the scheme disposal options through reasonable coverage or enabling additional access opportunities to cover significant gaps.
b) Collection will be free to holders of SR and may involve financial incentives to participate.
c) Collection will be based on the product.
d) The PSO will encourage the co-operation and use of infrastructure and networks of other schemes currently in place such as transfer stations, scrap yards etc if they have suitable facilities to manage unwanted SR.

5. APPENDIX A

Synthetic Refrigerant Working Group Members

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Temperzone	**Carl Easton**	Group Supply Manager	Private Bag 93303, Otahuhu, Auckland, New Zealand	ceaston@temperzone.com

6. REFERENCES

Cost Benefit Analysis – Reference Reports

1. Synthetic Refrigerant Stewardship Milestone 2: Report 1 - Critique existing system(s) including product regulations.
2. Climate Change Response Act 2002 Pt 7

7. GLOSSARY OF TERMS

Advanced disposal fee (ADF): a fee payed in advance that covers the costs of collection and safe disposal/destruction of an item or product.

Advanced stewardship fee (ASF): a fee payed in advance that covers the costs of the stewardship of an item or product through either all or part of its life.

Alternative refrigerant: A refrigerant other than that for which a system was designed.

BCR Benefit Cost Ratio (BCR) is the ratio of the present value of total benefits tothe present value of total costs.

Bulk: Refers to SGG refrigerants that are imported in containers that are not goods or motor vehicles that are subject to the SGG levy. These containers can be any size and in some situations are small, containing a few 100ml

Blend: A combination of two or more refrigerants in a defined ratio that forms a refrigerant with specified thermodynamic properties.

CBA Cost Benefit Analysis (CBA) is a method for organising information to aid decision making. CBA as two main features:

- costs and benefits are expressed in monetary terms and hence are directly comparable; and
- costs and benefits are valued in terms of the claims they make on and gains they provide to the community as a whole.

Charge: To load or fill a compressed gas container with a gas or combination of gases.

Compliance Certifier: A person approved by Worksafe New Zealand to issue compliance certificates as outlined in regulation 6.22 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Compressed gas: Gases and mixtures of gases stored under pressure.

Compressed gas container: Meaning as detailed in the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Contaminated refrigerant: A refrigerant containing oil, acid, non-condensable substances and/or moisture and/or other foreign substances. This could include mixed refrigerants (cocktails) that are not manufactured products.

Cylinder : Has the meaning given to it in the Health and Safety at Work (Hazardous Substances) Regulations 2017. These are used to store or transport compressed, liquefied or dissolved gases, but do not include an aerosol or a cartridge. They have a water capacity of 120mls or greater if the content is a liquefied flammable gas, a water capacity of 500mls or greater if the content is other than a liquefied flammable gas, and a water capacity not exceeding 500L**.**

Decommissioning: The process whereby a system is deliberately rendered inoperable.

Destruction: A process whereby a refrigerant is permanently transformed or decomposed into other substances.

Disposal: To dispose of or to convey a product usually for scrapping or destruction.

Disposable container, disposable refrigerant container: A non-refillable cylinder.

Emissions Trading Scheme (ETS): The NZ government's main tool for reducing greenhouse gas emissions by putting a price on emissions of gases that have a global warming potential. It requires all sectors of New Zealand's economy to report on their emissions and, with the exception of biological emissions from agriculture, to purchase and surrender emissions units to the Government for those emissions.

EPA: Environmental Protection Authority is the New Zealand authority responsible for implementing the HSNO Act.

Fluorocarbon (SGG): A hydrocarbon in which some or all of the hydrogen atoms have been replaced by fluorine.

Fluorocarbon refrigerant: A refrigerant consisting of or containing fluorocarbon.

Gas Substance that:

- Is completely gaseous as 20°C and at 101.3kPa absolute pressure; or
- Has a vapour pressure of more than 300kPa absolute pressure at 50°C.

Global warming potential (GWP): The atmospheric warming impact of a gas compared with an equal mass of carbon dioxide over a specified period of time (usually 100 years).

Householder: the person who owns or rents a particular property for the purpose of living in it.

HSW (HS) Act 2017: Health and Safety at Work (Hazardous Substances) Act 2017.

HSNO Act 1996: Hazardous Substances and New Organisms Act 1996.

Levy: A tax or fee *typically* imposed by government for a specific activity where normally the monies raised are hypothecated for a specific purpose.

Liquefied gas: A gas that has a critical temperature greater than -50°C and a boiling point not exceeding 20°C at 101.3 kPa absolute.

Low pressure liquefied gas: A liquefied gas with a critical temperature exceeding 65°C.

Maximum charge: Maximum amount of refrigerant that can be put in a cylinder, calculated by multiplying the water capacity of the cylinder by the refrigerant's fill ratio.

Maximum fill weight: This is calculated by adding the empty weight of the cylinder to the maximum charge.

Net Present Value (NPV): is the difference between the present value of total benefits and the present value of total costs.

Ozone Depletion Potential (ODP): The ODP of a chemical compound is the relative amount of degradation to the ozone layer it can cause

PCBU (Person Conducting a Business or Undertaking): In relation to a place that has a gas cylinder located in it, means:

- The person who is the owner, lessee, sub-lessee, occupier, or person in possession of the place or any part of it, or

• Any other person who, at the relevant time, is in effective control or possession of the relevant part of the place.

Permanent gas: A gas with a critical temperature not exceeding -50°C.

Plant: A combination of one or more refrigerating systems at a single site.

Pre-charged consumer products: Consumer products that are imported containing refrigerants.

Priority Product: A product whose waste will or may cause significant environmental harm; or there are significant benefits from the waste minimisation or treatment of the product. The Minister for the Environment must also:

- be satisfied that the product can be effectively managed under a product stewardship scheme
- consider the effectiveness of any relevant voluntary product stewardship scheme.

Producer: a person who —

- manufactures a product and sells it in New Zealand under the person's own brand; or
- is the owner or licence holder of a trademark under which a product is sold in New Zealand; or
- imports a product for sale in New Zealand; or
- manufactures or imports a product for use in trade by the person or the person's agent

Present Value (PV): is the discounted value of the cost or benefit

Product Stewardship Organisation (PSO): An organisation that is non profit and responsible for providing oversight of its Product Stewardship Schemes, award contracts for service delivery, stetting targets, strategic goals and advanced stewardship fees for PSS.

Product Stewardship Scheme (PSS): A scheme responsible for meeting targets set by the PSO which can include waste prevention, reuse, recycling, recovery and or disposal.

Reclaiming: To reprocess used refrigerant to new product specification by means which may include distillation.

Recovery: To remove refrigerant in any condition from a system and store it in an external cylinder, without necessarily testing or processing it in any way. It may be that the refrigerant is removed to enable the system to be repaired or de-commissioned.

Recycle: A process that uses a recycle unit in conjunction with a recovery unit, to process the refrigerant where it is going to be used again. The recycle unit removes the oil and solid gross contaminants only.

RECOVERY Trust NZ: The name of the Voluntary Stewardship Scheme which is held by The Trust for the Destruction of Synthetic. Collects SGG refrigerants and sends for them for destruction overseas.

Refrigerant: The medium used for heat transfer in a refrigerating system, which absorbs heat on evaporating at a low temperature and a low pressure and rejects heat on condensing at a higher temperature and higher pressure. Unless specified otherwise, 'refrigerant' in this guide refers to fluorocarbon refrigerant only. Note: The term 'gas' should be avoided when referring to refrigerants.

Refrigerated liquefied gas: A gas that, when packaged, is partially liquid because of its low temperature.

Refrigerating system: An assembly of piping, vessels, and other components in a closed circuit in which a refrigerant is circulated for the purpose of transferring heat.

Retrofit: To replace the original refrigerant (and components, lubricant, etc. as required) in a system with an alternative.

Returned refrigerant: Refrigerant recovered from a system and returned to the supplier (or equivalent) for reclaim or destruction.

Reuse: Use (charge) of recovered refrigerant without any processing to remove impurities.

RSWG: The Synthetic Greenhouse Gas Refrigerant Stewardship Working Group.

Synthetic greenhouse gas (SGG): artificial chemicals commonly used in refrigeration and air conditioning that have a high global warming potential because they can remain in the atmosphere for long periods of time and contribute to climate change.

Transport refrigeration: Any mobile refrigeration system other than air conditioning systems for passenger vehicles.

Volume of gas: The volume of a gas at 101.3 kPa absolute pressure and 15oC.

Waste Minimisation Act 2008 (WMA): Legislation that aims to encourages a reduction in the amount of waste generated and disposed of in New Zealand. The aim is to reduce the environmental harm of waste and provide economic, social and cultural benefits for New Zealand. It details the requirements that need to be met for a product to be a priority and the requirements for any mandatory product stewardship schemes.

Waste Minimisation Fund (WMF): A contestable fund manged by the Ministry for the Environment using monies collected from the Waste Disposal Levy, that aims to minimise waste.

Worksafe: WorkSafe is New Zealand's primary workplace health and safety regulator and enforcer.

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Signature: _____

Name: Carl Easton

Organisation: Temperzone.

Date: 23 March 2020.

Once all participants in the Working Group have signed off the report it will be sent to MfE for comment then made available to all stakeholders via the Synthetic Refrigerant Stewardship website.

Please scan and email this page to darren@3R.co.nz

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Signature: _____

Name: CHRISTINE JOHNSTON

Organisation: IRHACE.

Date: 27.3.2020.

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Signature: _____

Name: Dave Nicholls

Organisation: RealCold NZ Ltd

Date: 30/03/20

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Signature: _____

Name: Harry Dodson

Organisation: APIA

Date: 25/3/2020

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Signature: IBaggott

Name: Ian Baggott

Organisation: MTA

Date: 26/3/20

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Signature: _____

Name: Ivan Tottle

Organisation: Chemiplas

Date: 20/3/20

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Signature: _____

Name: KENNETH JOHN BOWEN

Organisation: REFRIGERANT RECOVERY

Date: 25TH MARCH 2020

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Signature: _____ *

Name: Leo. S. Mortimer

Organisation: Motor Industry Association

Date: 26/03/2020

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* The Motor Industry Association signs off the Report as an acknowledgement of the work progressed to date. This should not be treated as full acceptance of the proposal in its entirety, which will be subject for further public consultation.

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Signature: _____

Name: MALCOLM YORSTON

Organisation: VIA

Date: 25/03/2020

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Signature: _____

Name: PETER JEFFREY HUTSON

Organisation: H.P.S.A

Date: 25/3/2020

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Signature: _____

Name: Rob Morgan

Organisation: CCCANZ

Date: 26/3/2020

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Signature: _____

Name: Robert Watt

Organisation: Refrigerant Licensing New Zealand

Date: 23.3.2020

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