Notice
under s66 of the
Commerce Act 1986

Application by
Transpacific Technical Services (NZ) Limited
in relation to
the acquisition of the non-medical waste business of Medi-Chem Waste Services Limited

CONTENTS

COMMERCE ACT 1986: BUSINESS ACQUISITION

SECTION 66: NOTICE SEEKING CLEARANCE

19 February 2007

The Registrar
Business Acquisitions and Authorisations
Commerce Commission
P0 Box 2351
Wellington

Pursuant to s66(1) of the Commerce Act 1986, notice is hereby given seeking **clearance** of proposed business acquisitions.

Executive Summary

Proposed transactions

1 Clearance is sought for the acquisition by Transpacific Technical Services (NZ) Limited *(TTS),* or a wholly owned subsidiary of TTS, of:

(a) the assets and business of Medi-Chem Waste Services Limited (*Medi-Chem*) that relate to solvent treatment, recycling, and disposal; and/or

(b) the assets and businesses of Medi-Chem that relate to the collection, treatment and disposal of other hazardous wastes (the *'chemical smalls' business*) - but not including the medical and quarantine waste business, or the business of collecting and recycling lamps, amalgam and x-ray film and fluids.

The parties

2 TTS is a wholly-owned subsidiary of Transpacific Industries Group Limited, a company listed on the Australian Stock Exchange and which, amongst other things, has interests in the hazardous and non-hazardous waste markets in New Zealand and Australia.

3 Medi-Chem operates in the hazardous waste sector of the waste industry in New Zealand, providing waste collection, treatment and disposal services in relation to solvents and wastes containing volatile organic compounds; hydrocarbons; and laboratory chemicals. Medi-Chem also specialises in handling, packing and transport of intractable wastes for off-shore disposal.

4 Medi-Chem, and its related company International Waste Limited, are involved in medical, quarantine and infectious waste, and Medi-Chem also collects and recycles lamps, amalgam, x-ray film and fluids with Universal Metals Pty Limited and Eco Cycle Industries. These activities are not included in the proposed transactions.

Markets affected

5 The market affected by the proposed transactions is the hazardous waste market (comprising both solid and liquid hazardous wastes). TTS provides services in relation to a far wider range of hazardous wastes than Medi-Chem and the only areas where the proposal will give rise to horizontal aggregation are:

(a) the provision of treatment and, where required, disposal services for solvents and wastes containing volatile organic compounds; hydrocarbons; and laboratory chemicals;

(b) the provision of collection services for packaged hazardous waste.

6 In relation to solvents and laboratory chemicals, the market is national. In relation to hydrocarbons, the market is regional and the only market affected is Auckland. Collection markets are regional and the only market affected is Auckland.

7 A minor degree of vertical integration will result from the proposed transactions. This arises from:

(a) a related company of TTS, Transpacific Industries Group (NZ) Limited, having interests in landfills, the final disposal destination of some of the treated wastes; and

(b) Medi-Chem owning a facility for the packing and export of intractable wastes (pesticides and other chemicals that cannot be ultimately disposed of in New Zealand).

No Substantial Lessening of Competition

8 TTS submits that no substantial lessening of competition will result from the proposed transactions. In particular, in the affected markets:

(a) the actual increase in market share is very small;

(b) there are other competitors, each of which has spare capacity;

(c) there are relatively low barriers to entry; and

(d) many customers can 'self-supply'.

PART I: TRANSACTION DETAILS

1. What is the business acquisition for which clearance is sought?

1.1 Clearance is sought for either or both of the following acquisitions (each a *Proposed Transaction)* by Transpacific Technical Services (NZ) Limited *(TTS),* or a wholly owned subsidiary of TTS:

(a) the assets and business of Medi-Chem Waste Services Limited (*Medi-Chem*) that relate to solvent treatment, recycling, and disposal (the *solvents business*); and/or

(b) the assets and businesses of Medi-Chem that relate to the collection, treatment and disposal of other hazardous wastes (the *'chemical smalls' business*) but not including the medical and quarantine waste business, or the business of collecting and recycling lamps, amalgam and x-ray film and fluids.

1.2 TTS is a wholly-owned subsidiary of Transpacific Industries Group Limited *(Transpacific),* a company listed on the Australian Stock Exchange and which, amongst other things, has interests in the hazardous and non-hazardous waste markets in New Zealand and Australia.

1.3 Medi-Chem operates in the hazardous waste sector of the waste industry in New Zealand. The business to be acquired under the Proposed Transactions comprises:

(a) waste collection, treatment and disposal services provided from facilities in Auckland in relation to following categories of hazardous waste:

- solvents and wastes containing volatile organic compounds;
- hydrocarbons (substances composed predominantly of carbon and hydrogen) eg inks, glues, greases and related general waste such as contaminated drums and pallets and other packaging; and
- laboratory chemicals; and
- intractables[1].

(b) A dangerous goods warehouse in Christchurch for the packing of intractables and a small associated collection operation.

[1] Intractables are chemicals that cannot be disposed of in New Zealand according to current environmental regulations and processing technology. These include polychlorinated Biphenyls (PCBs), pesticides and persistent organic pollutants (POPs).

1.4 Medi-Chem is also involved in the collection, treatment and disposal of medical, quarantine and infectious waste. In Auckland, Medi-Chem provides medical and quarantine waste collection services under contract to EBOS Group Limited. Treatment and disposal services in Auckland, the Lower North Island and South Island are provided through an associated company, International Waste Limited. The business of recycling and collecting lamps, amalgam, x-ray film and fluids is conducted by Medi-Chem with Universal Metals Pty Limited and Eco Cycle Industries. The Proposed Transactions do not include these aspects of Medi-Chem's business.

1.5 A copy of the Agreement for Sale and Purchase relating to the chemical smalls business is attached as Appendix 2. The solvents business is not currently included in that Agreement.

2. Who is the person giving this notice?

2.1 This notice is given by:

Manus Pretorius
General Manager
Transpacific Technical Services
PO Box 58 032
Greenmount
Auckland

Telephone: (09) 273 2801
Facsimile: (09) 274 1065

2.2 All correspondence and notices in respect of this notice should be directed in the first instance to:

Chapman Tripp Sheffield Young
Level 35
ANZ Tower
23-29 Albert Street
Auckland

Telephone: (09) 357 9000
Facsimile: (09) 357 9099

Attention: Lindsey Jones
(09) 357 9020

Huw McKinlay
(09) 357 9254

3. Confidentiality

3.1 Do you wish to request a confidentiality order for the fact of the proposed acquisition?

No. Confidentiality is not required for the fact of the Proposed Transactions.

3.2 Do you wish to request a confidentiality order for specific information contained in or attached to the notice? If so, for how long? Why?

(a) Yes. Confidentiality is sought in respect of the information contained in the appendices accompanying the Confidential Copy of this notice. (The appendices are not attached to the public copy this notice.)

(b) Confidentiality is sought under section 100 of the Commerce Act 1986 and under section 9(2)(b) of the Official Information Act 1982 on the grounds that:

(i) the information is commercially sensitive and contains valuable information which is confidential to TTS and/or Medi-Chem; and

(ii) disclosure of it is likely to give an unfair advantage to TTS and Medi-Chem's competitors and unreasonably prejudice their commercial positions.

(c) TTS also requests that it is notified of any request made to the Commission under the Official Information Act for the confidential information, and that the Commission seeks TTS's views as to whether the information remains confidential and commercially sensitive at the time those requests are being considered.

4 Who are the participants (i.e. the parties involved)?

4.1 The Applicant

Transpacific Technical Services (NZ) Limited

PO Box 58 032
Greenmount
Auckland

Telephone: (09) 273 2801
Facsimile: (09) 274 1065
Attention: Manus Pretorius

4.2 The Target

Medi-Chem Waste Services Limited

9-13 Lorien Place
East Tamaki
Auckland

Telephone: (09) 273 1998
Facsimile: (09) 273 1992
Attention: Lincoln Falconer

All correspondence and notices addressed to Medi-Chem in respect of this notice should be directed in the first instance to:

Minter Ellison Rudd Watts
PO Box 3798
DX CP24061
Lumley Centre
88 Shortland Street
Auckland

Telephone: (09) 353 9847
Facsimile: (09) 353 9701
Attention: Andrew Matthews

5 Who is interconnected to or associated with each participant?

TTS

5.1 TTS is wholly owned by ERS New Zealand Limited, which is ultimately wholly owned by Transpacific Industries Group Limited, an Australian company listed on the Australian Stock Exchange. Corporate structure diagrams for the Transpacific Group and TTS are set out in Schedule 1.

5.2 Further details about TTS and the Transpacific Group are available at www.transtechserv.co.nz

Medi-Chem

5.3 Medi-Chem is owned by Tennex Waste Limited (90%) and Tennex Holdings Limited (10%). An ownership structure diagram is set out in Schedule 2.

5.4 Further details about Medi-Chem are available at www.medichem.co.nz.

6 Does any participant, or any interconnected body corporate thereof, already have a beneficial interest in, or is it beneficially entitled to, any shares or other pecuniary interest in another participant?

6.1 Neither TTS nor any of its interconnected bodies corporate has any beneficial interest in shares or any other pecuniary interest in Medi-Chem or any of its interconnected bodies corporate.

6.2 As far as TTS is aware, neither Medi-Chem nor any of its interconnected bodies corporate has any beneficial interest in shares or any other pecuniary interest in TTS or any of its interconnected bodies corporate. However, Transpacific Industries Group Limited, the ultimate parent company of TTS, is publicly listed on the Australian Stock Exchange and it is possible that Medi-Chem or one of its interconnected bodies corporate may have a beneficial interest in shares in Transpacific. TTS is not, however, aware of that being the case.

7	**Identify any links, formal or informal, between any participant/s including interconnected bodies corporate and other persons identified at paragraph 5 and its/their existing competitors in each market.**

7.1 TTS does not have any links, formal or informal, with Medi-Chem or any other competitor in any of the markets affected by the Proposed Transactions, other than the following:

(a) TTS contracts with Medi-Chem for the export of intractable wastes for which there are no treatment facilities in New Zealand;

(b) TTS may from time to time treat and dispose of hazardous wastes for Medi-Chem where Medi-Chem does not have facilities or capacity to treat the particular type of waste;

(c) TTS may from time to time send certain hazardous wastes to Chemwaste for treatment and disposal where the treatment of the particular type of waste may impact on the consent conditions at TTS's sites;

(d) In Christchurch, TTS sends its bulk liquid organic and heavy metal hazardous wastes to Dakins or Chemwaste for treatment and disposal as TTS does not have treatment facilities in the region;

(e) TTS sends its bulk liquid organic waste to Council treatment facilities in areas where it does not have treatment facilities of its own;

(f) the Agreement for Sale and Purchase in Appendix 2;

(g) Agreement for Sale and Purchase relating to the medical wastes business in the Lower North Island and South Island.

7.2 TTS is not aware of any links, formal or informal, between Medi-Chem or any other competitor in any of the markets affected by the Proposed Transactions, other than the following:

(a) the matters listed at paragraphs 7.1 (a) to (g) above;

(b) Medi-Chem from time to time sub-contracts the treatment and disposal of wastes to Chemwaste, where Medi-Chem does not have treatment facilities or capacity to treat the particular type of waste;

(c) Medi-Chem from time to time disposes of waste solvent for Chemwaste; and

(d) since Medi-Chem is the only provider of export services in relation to intractable wastes, Medi-Chem exports such wastes for other participants in the hazardous waste sector.

7.3 TTS is a member of a number of industry bodies and organisations, including the Liquid Waste Contractors' Special Interest Group of the New Zealand Water and Wastes Association, and user associations such as the printing industry, drycleaning industry and galvanising industry associations.

8 Do any directors of the 'acquirer' also hold directorships in any other companies which are involved in the markets in which the target company operates?

8.1 No – except to the extent that Medi-Chem and TTS have, and following the Proposed Transactions, will continue to have business activities in the medical and quarantine waste sector.

9 What are the business activities of each participant?

Transpacific Group

9.1 The Transpacific Group operates across five principal divisions:

(a) *Liquid and Hazardous Waste:* This involves the collection, transportation, processing, recycling and disposal of liquid and hazardous waste, including medical and quarantine waste, soil remediation and the refining and resale of recycled solvents. (In association with the resale of recycled solvents, this division also sells virgin solvents.)

(b) *Energy:* Transpacific's new energy division specialises in collecting, treating and recycling oil related waste streams in Australia, and in collecting oil related waste streams in New Zealand.

(c) *Solid Waste:* This division carries out solid waste collection, landfill construction and operation, transfer station construction and operation in New Zealand and Australia.

(d) *Industrial Solutions:* This division specialises in providing industrial cleaning and facilities to customers operating in a range of industries including the manufacturing, mining, construction and various government sectors in Australia and New Zealand.

(e) *Commercial Vehicles:* This division imports and distributes heavy-duty trucks and associated parts as well as MAN bus chassis, marine engines and industrial engines. It operates in Australia, New Zealand and parts of Asia.

9.2 The Proposed Transactions fall within the business group referred to in paragraph 9.1(a). With the exception of the medical and quarantine wastes business which is carried out under the Medismart name, these activities are carried out under the trading name Transpacific Technical Services. Transpacific Technical Services (NZ) Limited (*TTS*) is a wholly owned subsidiary of Transpacific Industries Group Limited.

TTS

9.3 TTS provides collection, treatment, recycling and disposal services in relation to liquid and hazardous waste materials.

9.4 TTS's liquid and hazardous waste services cover the following categories of waste:

(a) organic materials: these are mostly in bulk liquid format eg sewerage; cess-pits, industrial waste;

(b) solvents and wastes containing volatile organic compounds (for the purposes of this notice, referred to as *solvents*): eg paint thinners

contaminated with paint sludge, degreasing solvent contaminated with oil, or printing solvent contaminated with ink);

(c) acids and alkalis containing heavy metals eg lead and zinc (for the purposes of this notice, referred to as *heavy metals*);

(d) hydrocarbons eg inks, glues, greases and oil sludges and related general waste such as contaminated drums and pallets and other packaging;

(e) other chemicals;

(f) oils; and

(g) miscellaneous other hazardous waste requiring specialised treatments eg pesticides.

9.5 The particular services offered by TTS are:

(a) *Collection:* TTS has bulk liquid waste collection operations in Whangarei, Auckland, Hamilton, Tauranga, Whakatane, Rotorua, New Plymouth, Hastings, Palmerston North, Wellington and a recently opened facility in Christchurch. Liquid waste collection involves the use of vacuum tanker trucks to extract and transport waste for treatment and disposal.

TTS has collection operations for packaged hazardous waste in Auckland, Rotorua, Whakatane, New Plymouth and Wellington. Depending on the type of hazardous waste, flat deck trucks are generally used to collect and transport waste for treatment and disposal.

TTS also offers collection services in other regions by subcontracting the physical collection function to independently owned third party waste collection or transportation companies.

(b) *Treatment:* TTS has hazardous waste treatment facilities in Auckland, Rotorua, Whakatane and Wellington. These include solvent refineries in Auckland and Wellington.

Following major investment and construction in 2005, TTS's Auckland site is a large, sophisticated treatment and disposal facility providing services for a wide range of liquid and hazardous waste.

(c) *Disposal:* TTS provides a disposal service for the liquid and hazardous waste collected. The actual method of disposal will depend on the particular type of waste and the disposal location will depend on either the location where the waste was generated or the facility at which the waste has been treated (if it required treatment). In some instances, residual waste will be finally disposed of at a landfill owned by TPI (or by a joint venture in which TPI has an interest). In other instances, the residual waste will be taken to a landfill owned by a third party. Some treated

wastes are disposed of through the trade waste sewer system. Other wastes for which there are no treatment facilities are sent offshore for final disposal. TTS contracts with Medi-Chem for off-shore disposal.

9.6 As an alternative to disposal, a range of solvents and oils are refined and on-sold or refined on a tolling basis and returned to the customer. In association with the resale of recycled solvents, TTS also sells virgin solvents.

9.7 In addition to and in association with the above services, TTS also advises customers in relation to hazardous substances storage, handling, packaging and disposal; provides site remediation services; and emergency response to hazardous waste spills.

9.8 Table 1 at the end of this section summarises the operations at each TTS facility.

Medi-Chem

9.9 Medi-Chem provides collection, treatment and disposal services in relation to hazardous waste materials. Its business is located in Auckland and it has a dangerous goods warehouse in Christchurch for the packing of intractables plus a small associated collection operation.

9.10 Medi-Chem's liquid and hazardous waste services cover the following categories of waste:

(a) solvents;

(b) hydrocarbons – but only inks, glues, greases and related general waste such as contaminated drums and pallets;

(c) chemicals – but confined to laboratory chemicals; and

(d) intractables.

9.11 In addition, Medi-Chem provides services to the medical sector carrying out collection, treatment and disposal of medical, quarantine and infectious waste. In the lower North Island and South Island these services are supplied by an associate company of Medi-Chem, International Waste Services Limited . In Auckland its medical waste *collection* services are contracted exclusively to EBOS Medi-Waste, part of the EBOS Group. Medical and quarantine *treatment* services are provided through International Waste Limited.

9.12 Medi-Chem is also involved in collecting and recycling lamps, amalgam, x-ray film and fluids with Universal Metals Pty Limited and Eco Cycle Industries.

9.13 The activities referred to in paragraphs 9.11 and 9.12 are not included in the Proposed Transactions and accordingly no further consideration is given to these aspects of the hazardous waste markets.

9.14 Medi-Chem's non medical waste business is confined to packaged hazardous wastes (ie wastes in drums or other packaging). Medi-Chem does not provide services in relation to bulk liquids. The hazardous waste services offered by Medi-Chem which are included in the Proposed Transactions are:

(a) *Collection:* Medi-Chem has a small fleet of its own flat decked trucks based in Auckland and Christchurch. Where it is engaged to treat and dispose of waste and does not have collection vehicles, it subcontracts the physical collection function to independently owned third party waste collection or transportation companies who transport the waste to Medi-Chem's treatment facilities. In Christchurch, collected waste is warehoused at Medi-Chem's dangerous goods warehouse and transported to Auckland for treatment or export.

Medi-Chem holds contracts with:

- various Councils, including Environment Bay of Plenty to operate the "Hazmobile", a hazardous waste collection programme that services residential areas in the By of Plenty region; and
- the Ministry for the Environment for the collection of pesticides and redundant agrichemicals in rural areas.

Medi-Chem manages the process and subcontracting of the collection functions, and the treatment and/or disposal of the collected wastes. This is an aspect of the market that TTS is not currently involved in.

(b) *Treatment:* Medi-Chem has hazardous waste facilities at two sites in Auckland:

- East Tamaki: this includes a solvent refinery and facilities for the treatment of hydrocarbons and chemicals;
- Penrose: this facility is used solely for the handling and packing of intractable waste, which is sent overseas for disposal.

(c) *Disposal:* Medi-Chem provides a disposal service for the hazardous waste collected. As with TTS, the actual method of disposal will depend on the particular type of waste.

9.15 Medi-Chem specialises in handling, packing and transport of intractables for off-shore disposal. Intractables are chemicals that cannot be disposed of in New Zealand according to current environmental regulations and processing technology. These include polychlorinated biphenyls (PCBs), pesticides and persistent organic pollutants (POPs).

9.16 In mid 2005, Medi-Chem acquired the local business of Tredi NZ Limited, which specialised in intractable waste. Services offered by Medi-Chem in relation to intractable waste include: site audit and inspection; sampling identification and

risk analysis; containment and mitigation of immediate hazards; project planning and site clearance; decanting and packing for transport or storage; supervision and escorting of road transport; management of marine transport and compliance with IMDG and Basel Convention regulations; and safe disposal at TREDI and other safe disposal centres in Europe.

9.17 In addition to and in association with the above services, Medi-Chem also advises customers in relation to hazardous substances storage, handling, packaging and disposal; and emergency response to hazardous waste spills.

9.18 Medi-Chem also refines solvents on a tolling basis for customers.

9.19 Table 2 at the end of this section summarises the operations at the Medi-Chem facilities included in the Proposed Transactions.

Table 1: TTS facilities

Location	Collection		Treatment Facility	Disposal Facility
	Vacuum trucks	Flat deck trucks		
Whangarei	2	0	None. Bulk liquid organic waste is disposed of through the local Council owned waste water treatment plant. If the waste requires additional treatment it is taken to TTS's plant in Auckland.	
Auckland	9	2	Facilities for treatment of bulk organic liquid waste; hydrocarbons; heavy metals; chemicals. Solvent refining. Waste oil refining.	Wastes that are not recycled are disposed of either at a landfill or through the trade waste outlet (as appropriate). Transpacific has landfill interests in the Auckland region and trade waste outlets at TTS facility in East Tamaki.
Hamilton	3	0	None. Bulk liquid organic waste is disposed of through the local Council owned waste water treatment plant. If the waste requires additional treatment it is taken to TTS's plant in Auckland.	
Tauranga	3	0	None. Bulk liquid organic waste is disposed of through the local Council owned waste water treatment plant. If the waste requires additional treatment it is taken to TTS's plant in Whakatane or disposed of through a land-spreading operation in Katikati (bio-solids only).	
Whakatane	3	0	Bulk liquid organic waste.	Liquids are disposed of through trade waste outlet. Solids go to Council landfill.
Rotorua	7-8	0	Bulk liquid organic waste.	Liquids are disposed of through trade waste outlet. Solids go to Council landfill.
New Plymouth	5	1	None. Bulk liquid organic waste is disposed of through the local Council owned treatment plant. If the waste requires additional treatment it is taken to TTS's plant in Auckland.	
Hastings	1	0	None. Bulk liquid organic waste is transported to a treatment plant owned by Beard's Environmental or to the Council landfill.	
Palmerston North	4	O	None. Bulk liquid organic waste is disposed of through the local Council owned treatment plant. If the waste requires additional treatment it is taken to TTS's plant in Wellington.	
Wellington	4	1	Facilities for treatment of bulk organic liquid waste; hydrocarbons; heavy metals; chemicals. Solvents refining. Waste oil refining.	Wastes that are not recycled are disposed of either at a Council landfill or through the trade waste outlet (as appropriate). TTS has trade waste outlets at Seaview but Transpacific does not own a landfill in the region.
Christchurch	1	0	None. Bulk liquid waste is disposed of through Council or privately owned treatment plants (Dakins and Chemwaste).	

Table 2: Medi-Chem facilities

Location	Collection		Treatment Facility	Disposal Facility
	Vacuum trucks	Flat deck trucks		
East Tamaki	0	2	Facilities for treatment of: • hydrocarbons; • laboratory chemicals. Solvent refining	Wastes that are not resold are disposed of either at a landfill or through the trade waste outlet or sent to another treatment plant (eg Chemwaste), as appropriate. Medi-Chem does not own or have interests in any landfills but has trade waste outlets at its East Tamaki facility.
Penrose	0	0	Handling and packaging of intractable waste for export.	
Christchurch	0	1	None. Collection operation only – waste sent to Auckland for treatment and/or disposal.	

10 What are the reasons for the proposal and the intentions in respect of the acquired or merged business?

10.1 Medi-Chem's non medical and quarantine waste business is a quite small operation. Apart from the solvent refining and intractables aspects, this business is relatively unsophisticated: hydrocarbons are treated by mixing the hydrocarbons with sawdust in a truck mounted concrete mixer; chemicals are treated in two laundry sized sinks. Medi-Chem already outsources some of its treatment and disposal requirements to Chemwaste and TTS. It does not wish to spend money on the capital and compliance costs of expanding the business but has elected instead to concentrate on the medical and quarantine waste business.

10.2 Transpacific, on the other hand, wishes to exit the medical and quarantine waste business. It has been seeking a buyer for this business for over two years – and in 2006 sold its Lower North Island and South Island business to Medi-Chem (previous Commerce Commission's decisions in this sector suggesting that a sale of its Auckland medical and quarantine waste business to Medi-Chem could be problematic).

10.3 Transpacific's business strategy is to expand in New Zealand through organic growth and targeted acquisitions. Its business model is based on the provision of tailored services to meet the needs of its customer groups and to provide a comprehensive range of integrated total waste management and facility management services. The acquisition of Medi-Chem's non medical and quarantine waste business is consistent with both this strategy and business model. In particular, Medi-Chem's established off-shore disposal business for intractable wastes adds a new dimension to TTS's current operations.

PART II: IDENTIFICATION OF MARKETS AFFECTED

Horizontal Aggregation

11 Are there any markets in which there would be an aggregation of business activities as a result of the proposed acquisition?

MARKET DEFINITION

Introduction

11.1 In its review of waste markets to date, the Commission has broadly categorised waste markets as:

(a) hazardous or non-hazardous; and

(b) solid or liquid.

11.2 In relation to hazardous waste, in its investigation report into the merger of TPI and Waste Management in 2006 (the *2006 Report)* [2], Commission staff noted:

> "Currently, there is no definition of hazardous waste that is nationally accepted. The Basel Convention, developed by the United Nations Environment Programme and the OECD, defines hazardous waste as "waste that contains substances that are toxic to humans, plants or animals, are flammable, corrosive or explosive, or, have high chemical reactivity." This definition excludes radioactive substances." [para 26]

11.3 However, some guidance can be obtained from the Hazardous Substances and New Organisms Act (*HSNO*). HSNO places a general duty on people in control of hazardous substances to avoid, remedy, or mitigate any adverse effect from, and ensure compliance with the controls imposed on, the particular substance by HSNO. The main focus of HSNO is the management of the life cycle of imported and manufactured hazardous substances (and new organisms). For the purposes of HSNO, a substance is hazardous if it manufactured or imported and exceeds the threshold level set by HSNO Regulations.

11.4 The Hazardous Substances (Classification) Regulations prescribe eight classes of hazardous waste and the Hazardous Substances (Disposal) Regulations broadly prescribe the manner in which the eight classes of waste can be disposed of. These are summarised in Schedule 3.

11.5 With regard to the hazardous or non-hazardous distinction, the Commission concluded in its decisions on the application by Waste Management for clearance to acquire Waste Care,[3] that hazardous and non-hazardous waste comprise separate markets:

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[2] Investigation Report into Transpacific Industries Acquisition of Waste Management, 21 July 2006 – prepared by staff.

[3] Decisions 355 (14 May 1999) and 359 (9 June 1999).

> "...Hazardous waste differs from non-hazardous waste in requiring treatment prior to disposal. The main categories appear to be industrial waste, contaminated soil (from site restorations) and waste water. Of these, the last is by far the largest component, and is transported by dedicated piped networks to treatment plants. The treatment of hazardous waste generally involves the use of specialised transportation and treatment facilities, although once treated the (solid) waste can be disposed of in general landfills.[4] This suggests that from both demand-side and supply-side perspectives it is appropriate to treat the collection, treatment and transportation of hazardous waste as belonging to a separate product market." [para 48]

11.6 TTS agrees with this statement and does not consider that there has been any change in market conditions since 1999 that would lead to a different conclusion being reached today.

11.7 With regard to the distinction between liquid and solid waste, the Commission's 2006 Report concluded that solid waste and liquid waste comprise separate markets. While TTS agrees that this distinction is valid in some circumstances, in the present instance, the overlap in the activities of TTS and Medi-Chem is such that a distinction between liquid and solid *hazardous* waste is not required in all segments of the market. This is explained further below by reference to:

(a) the physical form of hazardous waste categories;

(b) collection/transportation methods;

(c) treatment processes; and

(d) disposal.

Physical form of hazardous waste categories

11.8 Liquid hazardous waste encompasses a wide range of fluid waste substances requiring various treatment and disposal processes.[5] Similarly, solid hazardous waste consists of a wide range of hazardous non-liquid material also with diverse treatment processes.

11.9 With some exceptions, the broad types or categories of hazardous waste treated by TTS come in both liquid and solid form. This is illustrated in the table below.

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[4] Unlike some other countries, New Zealand does not have special landfills for the disposal of untreated hazardous waste.

[5] The Commission's description of liquid hazardous waste in its investigation report into Transpacific's merger with Waste Management states:

> "Liquid hazardous waste include solvents such as turps and solvent-based paints, oil and other petroleum products, industrial chemicals such as timber treatment or metal processing waste, redundant or spoiled stocks of processing or laboratory chemicals, household chemicals including redundant medicines and garden sprays, and agricultural chemical waste." [para 28]

Table 3

Form of various categories of waste – liquid or solid

Category	HSNO class	Form
Organic materials	Class 6 or 9	Some solids but mostly liquid – eg sewerage, waste from cess-pits, industrial wastes (eg road sweepings, food waste, water based paint).
Solvents	Classes 3 and 6.1	Liquid.
Acids and alkalis containing heavy metals	Classes 6 and 8	Solid and liquid form.
Hydrocarbons	Class 3 and 9	Solid and liquid form eg paints, inks, glues, greases, oil sludges.
Waste oil (including petroleum based products)	Class 3	Liquid.
Other locally treatable chemicals (including pesticides and lab chemicals)	Classes 3, 6 and 9	Solid and liquid form.
Intractable chemicals	Classes 3, 6 and 9	Solid and liquid form.
Medical & quarantine waste	Class 6.2	Solid and liquid form
Associated contaminated materials (eg containers and pallets)		Solid.

Collection / transportation methods

11.10 The above categories of waste are variously collected in bulk or in packaged form.

Table 4

Form of various categories of waste – bulk or packaged

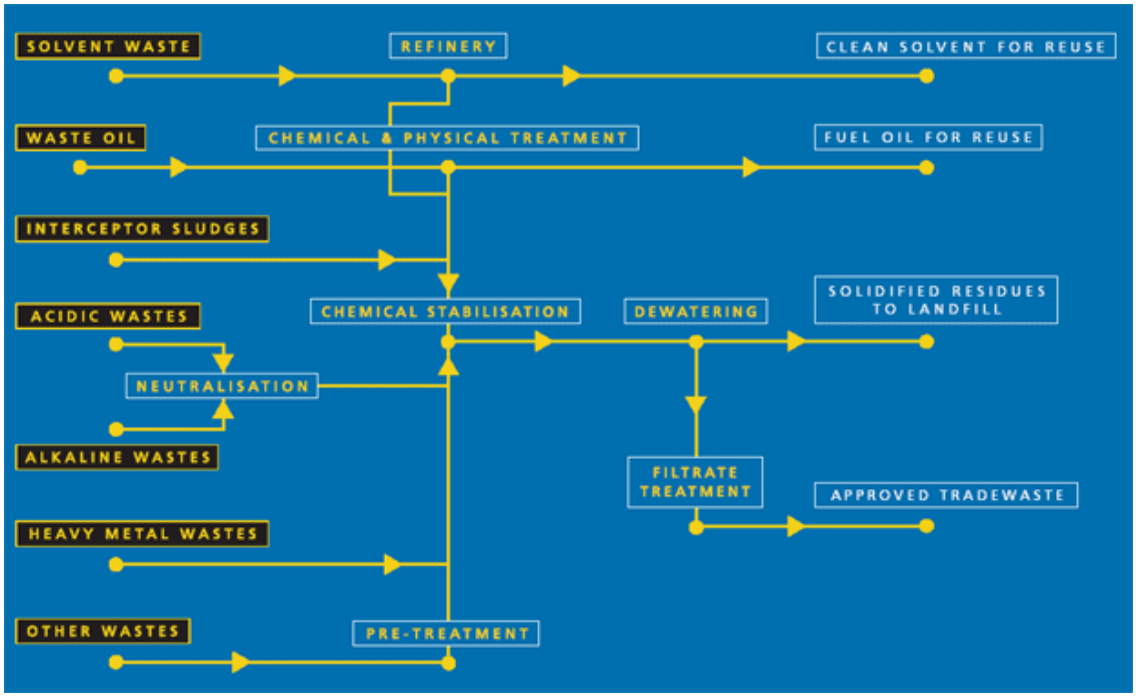
Category	Bulk or packaged
Organic materials	Generally bulk.
Solvents	Generally in 210 litre (44 gallon) drums. Some bulk (tanker loads) from larger TTS customers.
Acids and alkalis containing heavy metals	Mostly bulk. Some drums.
Hydrocarbons	Generally in 210 litre drums. Some bulk (tanker loads) from larger TTS customers.
Waste Oil	Mostly bulk. Some drums.
Other locally treatable chemicals (including pesticides and lab chemicals)	Generally small packages.
Other intractable chemicals	Generally small packages.
Medical & quarantine waste	Packaged
Associated contaminated materials (eg containers and pallets)	NA

11.11 The bulk wastes are generally collected/transported in large tanker trucks with vacuum attached pumps which suck out the waste from its source. The packaged wastes (liquid or solid) are generally collected in flat deck trucks.

Treatment processes

11.12 The categories of waste have different treatment methods, as illustrated in the following diagram.

Figure 1: Hazardous waste treatment processes



11.13 The various treatment processes can be broadly described as follows:

(a) *Refining*: In the case of solvents, contaminants are removed by a distillation process, which in some cases returns the solvent to near its original purity.

During distillation, spent solvent is heated, driving off the solvent in vapour form. The vapour reverts back to liquid form in a condenser and is collected, and the 'still bottoms', or waste remaining in the bottom of the still is then collected and disposed of.

Recycled solvents may be blended to produce low grade solvent products such as 'gun wash', which is typically used to flush painting spray guns, particularly in the automotive spray painting industry, and 'blanket wash' used to flush ink from printing press blankets.

Following the refining of solvents, where customers do not require the return of waste as refined product, these wastes are processed to remove volatile solvents, and the remaining sludges are treated (via other processes below) prior to disposal.

(b) *Chemical and physical treatment*: Waste lubrication oil is used to produce a low-grade heating oil. During the treatment process contaminants such as water and other chemicals (sulphur, lead etc) need to be removed. The waste oil is put through a physical treatment process (heating) to separate out the water and chemicals are added to remove other chemical contaminants. The waste water containing the chemical contaminants is then sent for treatment prior to being discharged to tradewaste. The treated oil is then allowed to settle and sludge is removed.

(c) *Neutralisation of corrosive waste*: Neutralisation in tanks is used to treat corrosive hazardous waste streams such as acidic and alkaline wastes (eg (metal treatment wastes, timber treatment chemicals, laboratory chemicals). Low pH (acidic) corrosive waste streams are neutralised by containing bases (i.e. substances that remove hydrogen from the acid), whereas high pH alkaline corrosive waste streams are usually neutralised by adding acids.

(d) *Pre-treatment*: Certain waste streams require preliminary treatment to enable them to undergo the main treatment process. For example:

(i) physical treatment where the physical form is changed (eg batteries are shredded so that the protective casing can be removed); or

(ii) a chemical process where the state of the material is changed (eg dusts, such as toners, are dissolved in liquids to enable treatment; liquids may be added to sawdust to create a semi-solid product to enable a bioremediation process; or the pH level of a certain odorous material may be altered to remove the odour).

(e) *Chemical stabilisation*: Stabilisation of waste includes the following processes:

(i) *Organic Sludges:* chemicals are added to these wastes primarily to remove and stabilise odours. The solid and liquid portions are separated using precipitation. The liquid portion is treated again prior to discharge to trade waste. The solid portion may be further chemically stabilised to meet landfill acceptance criteria.

(ii) *Bioremediation of hydrocarbons*: Liquid hydrocarbons such as “still bottoms”, inks, glues and paints are mixed with waste sawdust to form a solid. The blend is then subjected to a controlled composting process (which may be as simple as blending with sawdust) in which micro-organisms (bacteria and fungi) biologically degrade contaminants in the blend to remove any harmful volatile organic compounds (VOCs). The end product is a stable, non toxic, dry residue. Bioremediation reduces the potential to generate harmful leachate, making the residue more suitable for the landfills to which it is sent.

(iii) *Heavy metal wastes:* following neutralisation of the acids and alkalis the solid portion of the waste is precipitated out. The liquid portion is treated again prior to discharge to trade waste. The solid portion is further chemically stabilised to meet landfill acceptance criteria.

(f) *Dewatering*: Following the chemical stabilisation process the moisture content of the remaining sludges is too high to be transported or accepted at landfills and further dewatering is required. A number of methods are used, namely:

(iii) gravity: sludge is stacked in piles and through gravity the moisture drains off over time;

(iv) mechanical de-watering: there are a number of technologies available to speed up this process, including filter presses, centrifuges, driers (using heat) and belt presses.

(g) *Treatment of the residual liquid waste*: There is residual liquid waste from all of the above treatment processes. Prior to discharge to the trade waste system the liquid is tested to ensure compliance with the trade waste consent conditions. In some cases further chemical treatment is required prior to the liquid being discharged.

Disposal

11.14 Where hazardous wastes are not refined for reuse (as with solvents and waste oils), following treatment the waste is processed and/or repackaged for disposal, generally to landfill, incineration or the trade waste sewer system - depending on the category of hazardous waste involved. Certain intractable wastes that cannot be processed in New Zealand are exported to Europe for final processing and disposal.

11.15 The above categories of waste are generally disposed of as follows:

Table 5

Disposal of treated hazardous waste

Category	Disposal following treatment
Organic materials	Landfill and trade waste outlets.
Solvents	Recycled – sold for reuse or as a fuel blend. Landfill (residue only).
Heavy metals	Landfill.
HydrocarbonS	Landfill.
Waste oil	Recycled for use as a fuel. Landfill (sludges only).
Other locally treatable chemicals (including pesticides and lab chemicals)	Trade waste outlets. Landfill.
Other intractable chemicals	Exported.
Medical & quarantine waste	Landfill – after sterilisation. Certain wastes have to be exported (eg cytotoxics).
Associated contaminated materials (eg containers and pallets)	Landfill.

Summary of liquid and solid hazardous waste

11.16 Having regard to the various collection/transportation, treatment and disposal methods for the different categories of hazardous waste treated by TTS and by Medi-Chem, there is little to be achieved by distinguishing between liquid and solid hazardous waste in most segments of the market. The distinction is only really valid for some parts of the collection market where some liquid wastes are collected in bulk.

Single hazardous waste market or several smaller markets?

11.17 In Decision 442[6], the Commission noted that, in terms of supply side substitution, there is arguably a wider market for the disposal of chemical waste. It noted also that compliance with legislation pertaining to the treatment of waste solvent can necessitate substantial investment in concreting, bunding, and covered storage facilities and considered it inappropriate in that instance to adopt the wider market.[7]

[6] United Environmental/Solvent Services – October 2001.

[7] At paragraph 56.

11.18 However, in Decision 442 the only product which both the acquirer and target dealt with was solvents. In this instance, both TTS and Medi-Chem handle a number of waste types in common.

11.19 In the 2006 Report Commission staff considered whether the liquid hazardous and solid hazardous markets may be narrowed further:

> "…it may be that liquid hazardous can be further broken down to a market for solvents and a market for waste oil, given the specific collection vehicles and treatment required; and that solid hazardous may be further broken down into a medical and quarantine waste market…" [para 41]

11.20 While it is correct that treatment methods are not exactly the same across the various categories of waste, as illustrated above, there are collection and disposal processes that are common to the different waste types. For example, while the solvent treatment and refining process is different from other types of hazardous waste, the collection method for packaged solvents is not. There is no practical difference between collecting a drum of waste solvent than collecting a drum of waste paint, ink or glue.[8] Similarly, while hydrocarbons may be treated differently from acids and alkalis containing heavy metals, the treated product is disposed of in landfills.

11.21 There are also elements of the treatment processes which are common to the treatment of various types of waste. For example, at TTS heavy metals and organic waste are received in the same location at the treatment plant and treated in the same reactor vessel.

11.22 The commonality of processes across different waste types at the different functional levels is reflected in the fact that most hazardous waste firms handle a range of different waste types and can readily expand the portfolio of products they handle. From a supply side perspective, this suggests a single hazardous waste market.

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[8] The Land Transport Rule: Dangerous Goods 2005 created pursuant to section 152 of the Land Transport Act 1998 sets out the requirements for the safe transport of dangerous goods – which includes hazardous wastes. The rules specify various requirements for individuals involved in transportation and the vehicles that are used, depending upon the quantity, nature and use of the substance/article. The rules are not prescriptive for different types of goods but rather set out broad principles. For example, the packaging must be appropriate for the nature and quantity of the good, it must not react with the substance that it will contain and it must be robust so as to contain the goods safely without leaking under normal conditions of loading and transport. The packaging must be labelled/marked so as to identify the hazard they present to people/environment and such labelling must be legible and recognisable. The vehicle carrying dangerous goods must also carry documentation identifying the particular hazard involved and provide technical information relating to loading, segregation, nature of the substance etc. The goods must be appropriately segregated from goods that they may react with and according to the risks various types of substances pose to their surrounding environment. Certain classes of goods may not be on the same vehicle, for example flammable gases may not be loaded with flammable substances or spontaneously combustible items unless they are separated appropriately (3m in a horizontal direction). There are no specific requirements for hazardous waste or particular types of hazardous waste, as distinct from other hazardous goods.

Functional market

11.23 Also, while the collection, treatment and disposal of treated hazardous waste are physically separate functions, customers generally engage the treatment provider to provide all these functions – ie to:

(a) collect the waste or arrange for it to be collected (although in some instances, customers may arrange for the waste to be delivered to the treatment facility);

(b) treat the waste (either for recycling or for disposal); and

(c) dispose of the treated waste (if it is not recycled) or arrange for it to be disposed of.[9]

11.24 In relation to the recycling of solvents (being the only product which both TTS and Medi-Chem recycle), whether on a tolling basis for the customer or for on-sale, the majority of the treatment process is the same whether the end product is to be recycled or disposed off. Accordingly, recycling can be treated as a component part of the treatment function, rather than a separate functional level of the market.

Particular activities affected by the Proposed Transactions

11.25 While there is a distinction between the collection of bulk organic wastes and packaged wastes which may give rise to their being defined as separate markets, that distinction is not relevant in relation to most of the wastes affected by the Proposed Transactions since both Medi-Chem and TTS provide collection services only as an adjunct to their own treatment and disposal services (except as noted below). They do not participate in a market for the provision of hazardous waste collection services as a separate function. Accordingly, it is not necessary to separately assess the Proposed Transactions for their impact on a hazardous waste collection market.

11.26 The only exception to the above is in relation to intractable wastes where TTS collects, or arranges collection of, the wastes but does not treat them and Medi-Chem collects (or arranges collection of) and arranges the disposal (through exporting the waste). However, as the collection of intractables does not need to be separated from the collection of other packaged hazardous wastes, section 19 considers the collection market from the perspective of the wider 'packaged hazardous wastes' collection market.

11.27 While Medi-Chem's business involves the collection, treatment and disposal of a range of hazardous wastes, its range of activity is much narrower than that of TTS, as illustrated in Table 6.

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[9] With the exception of TTS in areas where it has related companies with landfill interests, the physical aspects of landfill disposal are provided by third parties.

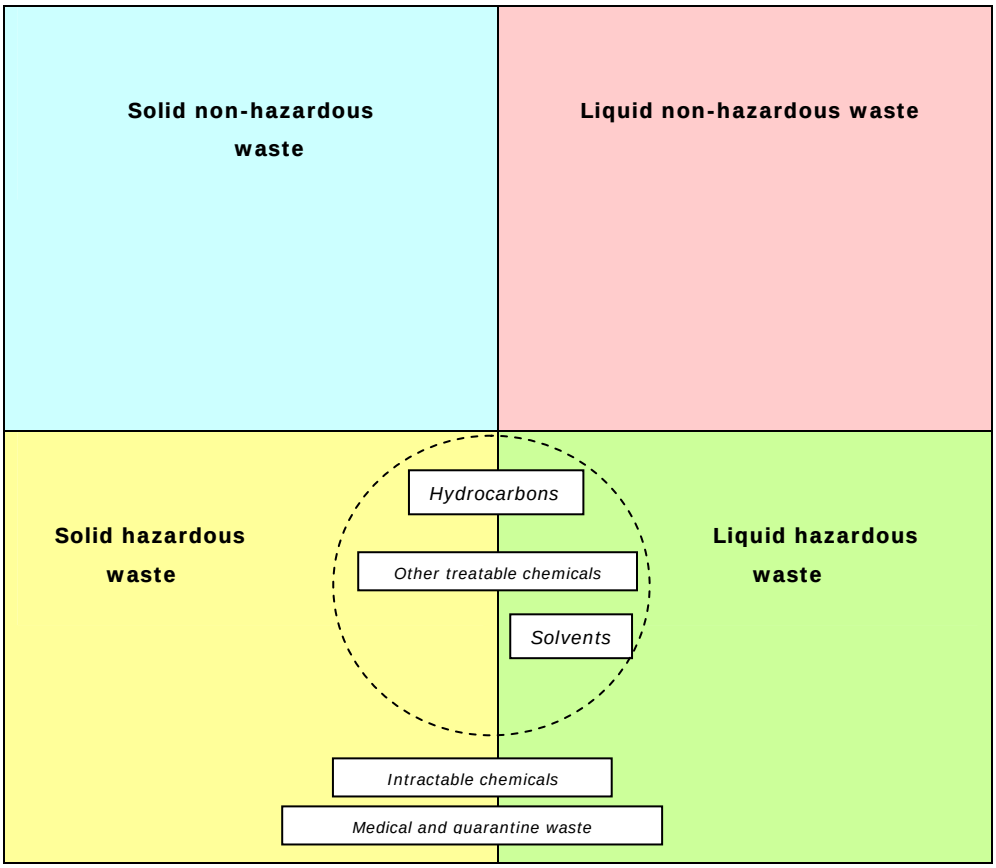
Table 6

TTS and Medi-Chem hazardous waste categories

Category	TTS	Medi-Chem
Organic materials	Yes	No
Solvents	Yes	Yes
Hydrocarbons	Yes	Yes
Heavy metals	Yes	No
Waste oil	Yes	No
Other locally treatable chemicals (including pesticides and lab chemicals)	Yes	Yes (lab chemicals only)
Intractable chemicals	Yes – but collection only	Yes
Medical & quarantine waste	Yes	Yes but this business is not included in the Proposed Transactions
Associated contaminated materials (eg containers and pallets)	Yes	Yes

11.28 In summary, the following diagram illustrates where the Proposed Transactions sit in relation to the wider waste industry.

Figure 2: The Proposed Transactions and the waste industry



11.29 Having regard to the general discussion at paragraphs 11.1 to 11.22, the particular activities of TTS and Medi-Chem and the categories of hazardous wastes which they both handle, TTS has assessed competition implications of the Proposed Transactions by reference to the following product and functional market definitions:

(a) the market for the treatment (including, where appropriate, treatment for reuse) and, where required, disposal of hazardous wastes (liquid and solid)[10] in the following market segments:

- solvents;
- hydrocarbons;
- laboratory chemicals, not including intractables; and

(b) the market for the collection of packaged hazardous wastes.

Solvents

Background

11.30 The only product which both and Medi-Chem treat which can be recycled is solvents. This section examines solvents in a little more detail.

11.31 Solvents are liquids that have the ability to dissolve, suspend or extract other materials without chemical change to the material or solvent.

11.32 Solvents are used in a number of industrial processes involving the application, cleaning, or separation of materials. Industries that commonly use solvents include: food processing, pharmaceutical manufacture, printing, painting and heavy industry.

11.33 In the food industry, solvents are used in the extraction of required substances from natural products, for example in the extraction of enzymes, oils, or flavourings. Similarly in the manufacture of pharmaceuticals, solvents separate the desired chemical products from unwanted ones, maximising the purity of the drug.

11.34 Solvents are used in paint manufacture to dissolve or disperse the different components (such as pigment and resin), and are also used to control the viscosity of paint. After paint has been applied, the solvent component evaporates, allowing the resin and pigment to produce a film of paint and to dry rapidly. In the printing industry, solvents are used to control viscosity and allow

[10] The exclusion of the medical and quarantine waste business from the wider hazardous waste market is consistent with the Commission's approach to market definition in its decisions relating to Medical Waste Group's application for clearance to acquire the business of San-I-Pak (NZ) Limited: Decisions 381 (19 January 2000) and 386 (16 March 2000).

ink flow without damaging printing rollers. Solvents also ensure optimum drying of the ink, allowing presses to operate at higher speeds.

11.35 In addition, solvents are used to flush paint spray guns, wash down printing presses, and as a degreaser in the cleaning of automotive and industrial machinery parts. Once used, the contaminated or 'spent' solvents form part of a waste stream that may be recycled and used again in the same or other processes.

11.36 Users of solvents choose to recycle spent solvent for three main reasons:

(a) currently, it is more cost effective to recycle solvent than to use more virgin solvent (but if the price of virgin solvent were to come down, the opposite may apply);

(b) use of solvents in industrial processes creates a hazardous waste stream which must be disposed of; and

(c) recycling reduces the amount of industrial waste to be disposed and therefore reduces associated environmental liability.

11.37 In Decision 442[11], the Commission noted that industry participants advised the Commission that the market for refined solvents in New Zealand was diminishing due to the move offshore of manufacturing companies, together with a desire on the part of solvent users to find alternative processes that would reduce their use of solvents. That desire was largely driven by environmental factors. This trend has continued.

11.38 Solvents can be recycled on a 'tolling basis' for the customer (where the customer's own solvent, or an equivalent volume of product of the same quality, is treated and sent back to the customer) or treated for on-sale by the refiner.

Recycled and virgin solvents

11.39 As the Commission noted in Decision 442, while all users of a recycled solvents could substitute virgin solvent for recycled product (albeit at a much higher price in some instances), for a significant number of solvent users[12], compliance with quality standards necessitates that they use virgin solvents only. The Commission concluded also that aqueous and caustic cleaners were substitutable for a relatively small segment of the market and for the majority of solvent users, could not be considered as substitutes.

11.40 The Commission concluded that the price differential between recycled and virgin solvents means that users of the former would not substitute the latter in the event of a 'ssnip' being applied to recycled solvent and accordingly, that the

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[11] At paragraph 23.

[12] These solvent users include industries such as food and drinks, paint, resins, adhesives, pharmaceuticals and building products.

product markets for recycled solvent and virgin solvent were discrete and that neither market included aqueous and caustic based cleaners.

11.41 While TTS accepts the Commission's conclusion for market definition purposes, it notes that virgin solvents and aqueous and caustic based cleaners represent some degree of constraint on suppliers of recycled solvents.

11.42 For some companies that can use recycled solvent, it is essential that their solvent is kept separate from others' during the recycling process in order to prevent contaminants entering their solvent, and consequently, their processes. In this instance, the solvent recycling company either collects or receives the spent solvent; batch distils it, disposes of any waste, and returns the recovered solvent to the customer, rather than supplying the company with recycled solvent from general stocks. This is in essence, a tolling operation.[13]

11.43 Where solvents are not refined for reuse on a tolling basis, TTS on-sells the refined solvent to third party purchasers. Medi-Chem does not actively sell treated (or virgin) solvents[14] - so the Proposed Transactions will not give rise to aggregation in the market for the sale of solvents.

Geographic dimension

11.44 For the product markets affected by Proposed Transactions, TTS's treatment facilities are located in Auckland and Wellington.[15] TTS's customers are largely North Island based but, except in relation to hydrocarbons, a number are in the South Island. (Refer customer lists for the relevant product market groups attached as Appendix 3.) TTS also transports some wastes from Auckland to Wellington to utilise additional capacity at its Wellington facility.

11.45 Medi-Chem has treatment facilities only in Auckland. Medi-Chem's Christchurch operation is a dangerous goods warehouse for the packing of intractables with an associated collection operation. Medi-Chem transports some South Island wastes to Auckland for treatment or disposal.

11.46 In Decision 442, in relation to solvents, the Commission defined the markets as national, noting the following:

> "The Applicant submits that each of the markets it has defined is a national one as the transporting of spent or recycled solvent is relatively easy and inexpensive. Industry participants advised the Commission that they have transported solvents between the North and the South Islands for both sale and disposal. Further, they said that if the supply of spent solvent decreased in their geographical region, or if the demand for solvent disposal services, solvent recycling services or the supply of recycled solvent increased in another area, they would transport solvents between the North and South

[13] The usage, recycling and disposal of solvents in the solvent recycling industry is illustrated in the diagram in Schedule 4.

[14] Medi-Chem has advised that it does not actively sell solvents and that sales are "virtually zero".

[15] TTS has bulk organic liquid waste collection and treatment facilities in other centres (refer section 9).

> Islands. Accordingly, the Commission concurs with the Applicant that the geographic markets are national." [para 65]

11.47 There has been no material change in relation to solvents since 2001. With the exception of hydrocarbons (inks, glues, greases and related general waste) both Medi-Chem and TTS transport wastes from the South Island to the North Island for treatment and disposal.

11.48 Due to lower acceptance criteria at landfills in areas outside the major centres, many inks, glues and greases are disposed of at local landfills rather than being transported to treatment facilities outside the region in which the wastes were generated. Consequently, treatment facilities for hydrocarbons tend to serve customers in a narrower geographic region.

11.49 In relation to collection of intractables and other packaged wastes, the only area where TTS and Medi-Chem both provide collection services on their own account is in Auckland.[16]

11.50 In relation to geographic market definition, TTS considers that the markets affected by the Proposed Transactions are:

(a) for the treatment and disposal of hydrocarbons – the market in the Auckland region (since it is only in Auckland that both TTS and Medi-Chem have hydrocarbon treatment facilities);

(b) for the treatment and disposal of other hazardous wastes – the national market; and

(c) for the collection of packaged hazardous wastes, the market in the Auckland region.

Ancillary activities

11.51 TTS and Medi-Chem also provide advice to customers in relation to hazardous goods handling, storage, packaging and disposal. These are ancillary to collection, treatment and disposal services and accordingly have not been addressed separately in this application.

[16] The only facility in New Zealand for the export of intractable waste is Medi-Chem's Penrose facility. While this serves the entire country, the collection markets are local.

Differentiated Product Markets

12 Please indicate whether the products in each market identified in question 11 are standardised (buyers make their purchases largely on the basis of price) or differentiated (buyers make their purchases largely on the basis of product characteristics as well as price).

12.1 Section 11 above illustrates that there are different collection, treatment and disposal processes for different types of hazardous waste but with some elements common to some waste types. However, the service offerings of suppliers within the hazardous waste industry are largely undifferentiated. Customers are predominantly driven by price and reliability.

12.2 As the Commission noted in Decision 442, some differentiation of product occurs in the market for the supply of recycled solvent. Whereas the dry cleaning industry mainly uses chlorinated solvents, the food processing industry might use acetone. The cost of such solvents also varies. However, the Commission concluded that the extent of differentiation is not such as to require close analysis of the extent of substitutability and did not define separate product markets for particular types of solvents.[17]

13 **For differentiated product markets:**

- ☐ **Please indicate the principal characteristics of products that cause them to be differentiated one from another.**
- ☐ **To what extent does product differentiation lead firms to tailor and market their products to particular buyer groups or market niches?**
- ☐ **Of the various products in the market, which are close substitutes for the products of the proposed combined entity? - which are more distant substitutes?**
- ☐ **Given the level of product differentiation, to what extent do you consider that the merged entity would be constrained in its actions by the presence of other suppliers in the market(s) affected?**

Not Applicable

[17] At paragraph 59.

14 Vertical integration

Introduction

14.1 The only aspects of the Proposed Transactions that will give rise to vertical considerations are:

(a) TTS provides a collection service for intractable wastes and Medi-Chem manages the export of such wastes (including storage prior to export); and

(b) in Auckland, Transpacific has interests in landfills and transfer stations.

14.2 The level of vertical integration is minor.

Intractable wastes

14.3 Medi-Chem is the only supplier of services for the export of intractable wastes from New Zealand. Medi-Chem is already vertically integrated within this sector of the hazardous waste market as it collects intractable wastes.

14.4 TTS does not consider that its acquisition of this aspect of Medi-Chem's business will alter the ability of third party intractable waste collectors to access export facilities. There is only one facility at present and the transaction will not change that.

14.5 TTS has considered whether, if the intractable wastes collected by TTS were to remain independent of the intractable wastes collected by Medi-Chem, that would encourage a new entrant provider of export services for intractable wastes. TTS believes the answer to this is no for two reasons:

(a) New entry is unlikely. Entry requires the co-ordination of a number of factors: securing a contract with an off-shore party with incineration facilities for the waste; obtaining export permits from the Ministry of Economic Development; arranging a contract with a shipping company with a defined route to the export destination; obtaining clearances for the waste to pass through all the ports on the route; and obtaining import permits for the export destination. The various clearances required have different time periods attached to them and TTS's experience was that by the time the clearances had been obtained, the shipping route would change and the export and import permits had expired. TTS had expected to be able to have the service up and running within two years but found itself unable to do so.

(b) The collection market is highly contestable. There are few barriers to the provision of a collection service and a new entrant wanting to provide export services could readily establish a collection service.

Landfills

14.6 Some of the hazardous waste that is treated by TTS and Medi-Chem is ultimately disposed of in landfills. The treated waste may be deposited directly at the landfill or may be deposited at a transfer station for ultimate disposal (in practice, treated hazardous wastes do not generally go through transfer stations).

14.7 TTS does not consider that the Proposed Transactions would give rise to any vertical concerns in this respect. In the Auckland region, competitors will continue to have the option of depositing treated hazardous waste at Transpacific landfills or the EnviroWaste Services Limited landfill at Hampton Downs. The Proposed Transactions will not affect this.

14.8 Appendix 1 contains TTS's estimate of the amount of treated hazardous waste that Medi-Chem ultimately disposes of at landfills annually. This is a minute percentage of the total landfilled waste in the greater Auckland region (including Hampton Downs) estimated at around 1.4 million tonnes per annum[18]. TTS's ability to determine the disposal destination of this waste will not have any impact on competition at either the transfer station or landfill levels of the market.

[18] Estimate based on Auckland Regional Council Total Landfilled Tonnes plus estimate for Hampton Downs.

15 **In respect of each market identified in question 11 identify briefly:**

- ☐ **all proposed acquisitions of assets of a business or shares involving either participant (or any interconnected body corporate thereof) notified to the Commission in the last three years and, in each case,**
  - **the outcome of the notification (e.g. cleared, authorised, declined, withdrawn)**
  - **whether the proposed acquisition has occurred.**
- ☐ **any other acquisition of assets of a business or shares which either participant (or any interconnected body corporate) has undertaken in the last three years.**

TTS

15.1 All acquisitions in New Zealand within the last three years by companies in the Transpacific Industries group were notified to the Commission in the context of the Commission's investigation into the merger of Transpacific and Waste Management in 2006 and Transpacific's clearance application to acquire certain assets of Enviro Waste Services Limited and Manawatu Waste Limited filed in December 2006.

Medi-Chem

15.2 TTS is aware of the following acquisitions by Medi-Chem within the last three years:

(a) In mid 2005, Medi-Chem acquired the local business of Tredi NZ Limited, which specialised in intractable waste.

(b) In October 2006, Medi-Chem acquired the lower North Island and South Island medical and quarantine waste business of Medi-Smart Limited (a wholly owned subsidiary of TTS).

THE FOLLOWING SECTIONS ADDRESS PARTS III, IV AND V: CONSTRAINTS ON MARKET POWER BY EXISTING AND POTENTIAL COMPETITION AND OTHER POTENTIAL CONSTRAINTS IN RELATION TO EACH OF THE IDENTIFIED PRODUCT MARKETS

16. Treatment of Hazardous Waste

Existing competitors

Chemwaste

16.1 Chemwaste Industries Limited is a privately owned company that operates waste treatment plants in Auckland, Wellington and Christchurch.

16.2 Chemwaste's website promotes the company as "one of New Zealand's largest privately-owned companies providing collection, treatment and disposal of all types of hazardous and non-hazardous wastes, both solid and liquid". A list of the types of waste commonly handled by Chemwaste is set out at http://www.chemwasteindustries.co.nz/treat-disp.html. These include acids and alkalis containing heavy metals; hydrocarbons; and chemicals. Chemwaste does not currently distil/refine solvents, but its website refers to providing services in relation to solvents. A related company of Chemwaste has a solvent refining facility in East Tamaki which is not presently in use.

16.3 According to its website, Chemwaste operates a range of road tankers and flat-deck vehicles for the collection of waste products. The fleet includes a B-Train unit capable of carrying 26,000 litres, plus other tankers capable of carrying between 4,000 and 12,000 litres, a waste oil classified tanker, and two flat-deck trucks used for collecting packaged or drummed wastes. Chemwaste owns and operates specialised tankers fitted with vacuum loading capabilities enabling them to retrieve anything from wastes with characteristics like water, to those which are very heavy such as drilling mud. It also has access to tipper trucks, excavators, long-haul liquid tankers and others for more specialised requirements.

16.4 Chemwaste also has associations with other transport companies, which service other regions of the country.

Dakin

16.5 B. J. Dakin & Company Ltd is a Canterbury owned and operated company which, according to its website http://www.dakins.co.nz/liquidwaste.htm has been involved in the collection and disposal of liquid waste for over 35 years. The website states:

> The owner and Managing Director of the Company, Brian Dakin, began business in 1960, originally as a registered plumbing and drainage contractor specialising in water and sewage reticulation. He subsequently expanded into the disposal of septic tank effluent and grease trap waste, using vacuum tankers.
>
> Increase environmental awareness lead to the cleaning of interceptor pits, industrial sumps and drains and the treatment and disposal of the waste from them. The Company has been involved in the collection, treatment and disposal of hazardous waste liquids since the late 1970's.

> Dakins staff are available 24 hours, 7 days a week, 365 days of the year. An immediate service is offered for all spills, overflows, plant failures and chemical emergencies. Emergency situations take priority over all other work, with Company staff being diverted to attend these situations as required.

16.6 TTS understands that Dakin provides hazardous waste collection, treatment and disposal services for the same range of hazardous wastes as TTS, with the exception of solvents.

Others

16.7 In addition to the above, the following companies provide solvent refining services:

(a) *Solvent Refiners*: Solvent Refiners is based in Christchurch and predominantly refines spent solvent sourced from the South Island;

(b) *Solvent Rescue*: Solvent Rescue is also based in Christchurch and predominantly refines spent solvent sourced from the South Island; and

(c) *Solvent Recovery BOP*: Solvent Recovery is a small operation based in Tauranga that sources its spent solvent from the Bay of Plenty and Waikato areas.

Market shares

16.8 It is difficult to determine with any degree of accuracy, the market shares of the participants in the hazardous waste markets. In Appendix 1, TTS has estimated the relative market shares of the total hazardous waste market, excluding medical and quarantine waste. Medi-Chem accounts for a very small portion of this wider hazardous waste market.

16.9 However, in Appendix 1, TTS has listed the categories of waste treated by both TTS and Medi-Chem (solvents; hydrocarbons; and laboratory chemicals) and broadly estimated the volumes of waste generated and the volumes treated by the various market participants.

16.10 TTS estimates that the Proposed Transactions will be outside the Commerce Commission's safe-harbour guidelines. However, given the size of the Medi-Chem operation, the actual increase in market share is very small – virtually de minimis.

Other constraints

16.11 While the Proposed Transactions will result in an increase (albeit very small) in TTS's share of the relevant markets and will reduce the number of service providers, TTS does not consider that either of the Proposed Transactions would give to a substantial lessening of competition. TTS will be constrained in its ability determine pricing and service quality standards by a combination of number of factors, in particular:

(a) the presence of the other providers referred to above;

(b) the spare capacity of the other providers;

(c) relatively low barriers to entry;

(d) for some customers that have their solvents treated for recycling on a tolling basis, the potential to use alternative products (such as aqueous and caustic based cleaners) or virgin solvent; and

(e) the ability of customers to self-supply.

Spare capacity

16.12 TTS considers that there is sufficient remaining independent capacity in the market to meet demand for treatment of the relatively small volumes of solvents, hydrocarbons and laboratory chemicals currently treated by Medi-Chem.

16.13 In relation to solvents, the productive capacity of equipment can be determined with reasonable accuracy. TTS has estimated the available capacity of the other providers based on current facilities operating 12 hours a day, 6 days a week for 50 weeks of the year. These estimates are set out in Appendix 1.

16.14 However, given the nature of the treatment processes for hydrocarbons and laboratory chemicals, there is no real basis for measuring productive capacity. For both hydrocarbons and laboratory chemicals the only limitations are space and manpower. To that extent, there are few capacity limitations.

16.15 In relation to solvents, it is relevant that Environmental Recovery Services (NZ) Limited (*ERS*)[19], a related company of TTS, accounts for approximately 25% of the market demand for solvent refinery services. ERS aggregates solvents collected from a number of smaller commercial operators such as paint shops and mechanics.

Barriers to entry

16.16 Table 8 at the end of this section lists various entry conditions that the Commission has identified in its Mergers & Acquisitions Guidelines and considers their application to the various segments of hazardous waste treatment market in which TTS and Medi-Chem operate.

16.17 There are in fact limited obstacles to new entry or further expansion by existing participants.

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[19] ERS offers specialised cleaning and waste management solutions and services in the automotive, industrial and paint markets. Its range of products and services include servicing and maintenance of parts cleaning machines including solvent based manual washers or fully automatic water based machines; service and maintenance of spray paint gun cleaning equipment; collection, transportation and treatment of packaged industrial waste (treatment being carried out by TTS); and a range of workshop cleaning products, spill kits and absorbent products.

16.18 As to who the potential new entrants might be, TTS considers that the most likely would be:

(a) *Hazardous waste operators*: Chemwaste is seen as potentially expanding its operations to include solvent refining. There are also several other companies that provide hazardous waste services and some which actively promote themselves as providing disposal services but presently do not, as far as TTS is aware, provide any treatment services themselves. These include:

- Hi-Tech Disposals, based in Auckland – refer http://www.hitechdisposals.co.nz/
- JBL Environmental, based in Blenheim – refer http://www.jblenvironmental.co.nz

(b) *Solid waste operators*: one of the many existing participants in the solid, non-hazardous waste sector;

(c) *Liquid waste operators*: for example:

- Interclean: Interclean, which provides various liquid waste removal and cleaning services, recently purchased the business of Liquid Waste Disposals which has an organic liquid waste and composting facility in Wiri;
- Salters Cartage: Salters delivers bulk petroleum and packaged lubricants and collects and refines waste oil.

(d) *Chemical suppliers*: Companies which sell chemicals of various kinds are well placed to enter the market as they already have established contacts with customers. For example, TTS understands that Marketing Chemicals Limited (www.marketingchemicalsltd.co.nz) already collects and aggregates waste chemicals to obtain better pricing from existing treatment companies;

(e) *New operators*: former employees of any of the existing providers could readily enter the market.

- Chemwaste, for example, was established approximately 10 years ago by former Waste Management employees following the sale by Waste Management of its hazardous waste business to Nuplex (the Nuplex hazardous waste business now being the business owned by TTS).
- Brockett & Associate Limited is a company established by a former technical manager for TTS which builds and installs solvent stills, mainly for customers who wish to do their own recycling.

Constraint from customers

16.19 In Decision 442, the Commission recognised the ability of solvent waste customers to self-supply and to do so within a relatively short time frame if they became dissatisfied with the merged entity's service. TTS recognises that if it were to cease to maintain competitive pricing and service quality, it would run the risk of other customers electing to self-supply. In particular:

(a) In relation to solvents:

- Solvent customers could invest in their own still at a cost of around $20,000. For example, TTS understands that in the last three years, Sealed Air Corporation, Amcor Packaging and Chequer Packaging have each installed their own stills for this purpose.

- TTS needs a supply of used solvents in order to produce recycled solvent for on-sale. If TTS were to charge too much for the treatment and disposal of solvents it would risk losing access to the underlying ingredient of its recycled solvent business.

(b) Ink, glue and paint manufacturers could manually mix their wastes with sawdust (or invest in a truck mounted concrete mixer) and either take their wastes directly to the landfill themselves or put them in a bin for collection by a third party waste collector[20].

(c) For other chemical wastes, the only producers of chemical wastes affected by the acquisition will be laboratories since:

- Medi-Chem does not provide treatment services for chemicals other than laboratory chemicals; and

- TTS does not provide disposal services for intractables.

Since the process for treatment of laboratory chemicals is essentially neutralisation and dilution, most laboratories could readily carry out this function themselves.

16.20 The Transpacific group also provides waste collection services in the non-hazardous waste sector to many of the same customers as TTS. If TTS were to attempt to increase prices above competitive levels, then in addition to the other constraints listed above, Transpacific would run the risk of losing those customers from its solid waste business. These customers have leverage over TTS by threatening to switch to Transpacific's competitors in the solid waste sector.

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[20] In some areas outside Auckland, hydrocarbons can be disposed of directly at landfill without treatment.

Other constraints in the solvent sector

16.21 Although not total constraints on their own, the following represent some degree of constraint in the solvent sector:

(a) alternative products; and

(b) users of spent solvents as a fuel.

16.22 For some customers using solvents in their industrial processes, there are alternative products that could be used if following the acquisition of Medi-Chem's solvent business, it were to increase prices for the toll refining or the sale of recycled solvents.

(a) Aqueous and caustic based cleaners are a biodegradable alternative to solvents in some industrial processes, in particular, parts degreasing. Parts degreasing has historically consisted of manually washing parts in a bath of solvent to rid them of grease. As the Commission noted in Decision 442[21], advancements in technology together with a desire to have more environmentally friendly processes, has led some businesses to substitute their solvents for aqueous and caustic based cleaners.

Essentially, aqueous and caustic based cleaners are industrial-strength detergents that are typically used with custom-made parts washing machines. The process of dispersing 'detergent' over the greasy parts with jets of water and rotating the parts resembles that which occurs in a domestic dishwasher. The waste from the process is usually released into a trade waste outlet.

TTS recognises that aqueous and caustic cleaners are not currently substitutable for all customers.

(b) High powered water based cleaning machines are now available as alternatives to gun wash. For example, ERS promotes the Turbowash range of cleaning units. (Refer http://www.environmentalrecovery.com/TIG/Companies/portfolio/ERS.asp) Also, TTS understands that where Fonterra had previously been using solvents to flush equipment lines, it is now using a steam process.

(c) Virgin solvents can be substituted for recycled solvents. Some users may elect to do so in the face of a price increase for refined solvents.

(d) In addition, particularly where international oil prices have fallen and the New Zealand dollar is high, virgin solvents can be purchased at below the cost of refining. From time to time, virgin solvent

[21] At paragraph 24.

purchased cheaply overseas has been marketed in New Zealand at prices lower than refined solvent. For example, Marketing Chemicals have, from time to time, imported virgin solvents and sold these at prices lower than the recycled products sold by TTS.

16.23 TTS understands that the cement producer, Holcim, has obtained resource consent to use waste solvents in its Westport kiln. If Holcim proceeds to do so, Holcim will become a significant provider of solvent disposal services, in competition with TTS.

No elimination of a maverick

16.24 TTS does not consider that Medi-Chem operates its hazardous waste business in a way that could be described as non-typical or innovative of that it can be regarded as a maverick.

Co-ordination effects

16.25 Table 7 below assesses the features of the hazardous waste treatment markets against the various factors that the Commission considers indicate the scope for coordinated conduct and whether the Proposed Transactions are likely to increase that scope.

Table 7

Co-ordination effects

Factor	Present	Effect of Proposed Transactions
Scope for collusion		
High concentration of sellers	Yes	Increases concentration by one
Undifferentiated product	Yes	No change
Price inelastic market demand	Uncertain	No change
Entry by new firms is slow	No	No change
Few fringe competitors	In the solvent sector, there are small competitors with the ability to increase their throughput.[22]	No change
Loss of an aggressive competitor	No	No change
Static production technology	Yes	No change
History of anti-competitive behaviour	No	No change
Purchasers have countervailing power	Yes	No change
Scope for detection		
High concentration of sellers	Yes	Increases concentration by one
Frequent sales	Yes	No change
Stable, slow growth in demand	No	No change
Price transparency	Yes – probably	No change
Cost similarities between businesses	Yes – but probably only in the solvent sector but not in other sectors.	No change
Multi-market contact	No	No change
Lack of vertical integration	Small degree of vertical integration with TTS	No change

16.26 The above analysis suggests that the Proposed Transactions are unlikely to materially enhance the scope for co-ordinated conduct in the affected markets.

Summary

16.27 In summary, TTS considers that the combination of the above factors is such that neither of the Proposed Transactions would result in a substantial lessening of competition in any of the affected markets.

[22] See Decision 442, at paragraph 123.

Table 8
Consideration of conditions for entry into the solvent recycling market

Potential barrier	Solvents	Hydrocarbons	Chemicals
Substantial economies of scale or scope in production	Only really to the extent that larger toll refining customers require large volumes to be refined within a short period. This could not be done by a small operator with limited refining capacity. However, there are only around 10 large toll refining customers in New Zealand.	Smaller operators (such as Medi-Chem) would not be able to obtain volume discounts for disposal of treated product at landfills.	None.
Sunk costs from investing in tangible assets or intangible assets	Refinery infrastructure. New equipment capable of processing 50 and 100 litres per hour could be installed for around $15,000 and $20,000 respectively.	Minimal. Glues, inks and paints can be treated manually with a shovel, digger or with any industrial mixing equipment eg concrete mixer.	Minimal. Sinks and access to trade waste system.
Higher costs of capital often associated with a new business lacking a track record.	No.		
Presence of consumer switching costs.	No. Some customers have term contracts but largely the market is "uncontracted". Customers largely purchase on an as required basis on the suppliers' standard terms of trade.		
Difficulty in accessing distribution channels, infrastructure, technology or raw materials.	No. Collection contractors, equipment, disposal locations for residual treated waste are all readily available.		
Existence of any first mover advantage for incumbent businesses.	No. Although TTS is a well established business with a good reputation and some long standing customers, this is unlikely to give TTS first mover advantage. TTS will retain its customers only if it continues to provide a high quality service at a reasonable price.		
Entry licensing.	Limited licensing requirements. Resource consents and licences from the relevant authorities required to store and process hazardous waste. If providing collection service, drivers will need a dangerous goods endorsement and/or approved handler test certificate.		
Quality standards.	No – other than environmental controls. Some solvent recycling customers need to ensure product is not contaminated by other solvents.		

Potential barrier	Solvents	Hydrocarbons	Chemicals
Environmental controls.	Requires compliance with the Resource Management Act 1993 and HSNO and local authority requirements relating to emissions and land use. New entrant would need to identify suitably zoned land – but new facilities would not need to be located within existing high density industrial areas. In Decision 442, the Commission noted that the Auckland Regional Council advised that it would be relatively simple for a new entrant to gain consents for a solvent refinery if, for example, it were to set up in an existing warehouse which had concrete flooring in place.		
Intellectual property rights.	No.		
Likelihood and effect of incumbent businesses investing in excess capacity; advertising heavily to raise customer loyalty, brand reputation, sunk costs; raising customer switching costs, e.g. by offering volume discounts; or signaling that entry would be responded to aggressively or in a predatory fashion.	Unlikely. Advertising and branding is not a feature of the hazardous waste industry. TTS stands on it long standing reputation for environmental compliance and high quality service at a reasonable price.		

17. Collection of hazardous wastes

Introduction

17.1 As noted in section 9 (Tables 1 and 2) the only area where both TTS and Medi-Chem have their own collection/transportation operations for packaged hazardous wastes is Auckland. Medi-Chem has a small packaged waste collection facility of its own in Christchurch but TTS does not.

17.2 In other areas, they contract third party transportation companies to collect packaged hazardous wastes and transport them to treatment facilities – or, in the case of intractable wastes, to Medi-Chem's facility in Penrose.

Competitors

17.3 The estimates of volumes of waste treated by Medi-Chem and TTS set out in Appendix 1 reflect, to some extent, the volumes they 'collect' – although as noted earlier, other than in relation to intractable wastes, both TTS and Medi-Chem provide collection services only as part of their hazardous waste disposal service.

17.4 In relation to intractable wastes, the total volume of wastes exported from New Zealand is around 100 tonnes per year. TTS's estimate of the volumes of intractable wastes collected by the various providers of collection services is set out in Appendix 1. These include volumes collected through sub-contract arrangements with third party transportation companies.

17.5 The combined shares for TTS and Medi-Chem for collection of intractables wastes would be outside the Commerce Commission's safe-harbour guidelines (if the collection market were defined as narrowly as this). However, the Proposed Transactions are unlikely to give rise to a substantial lessening for competition in this market for the following reasons:

(a) the actual increase in market share is de minimis; and

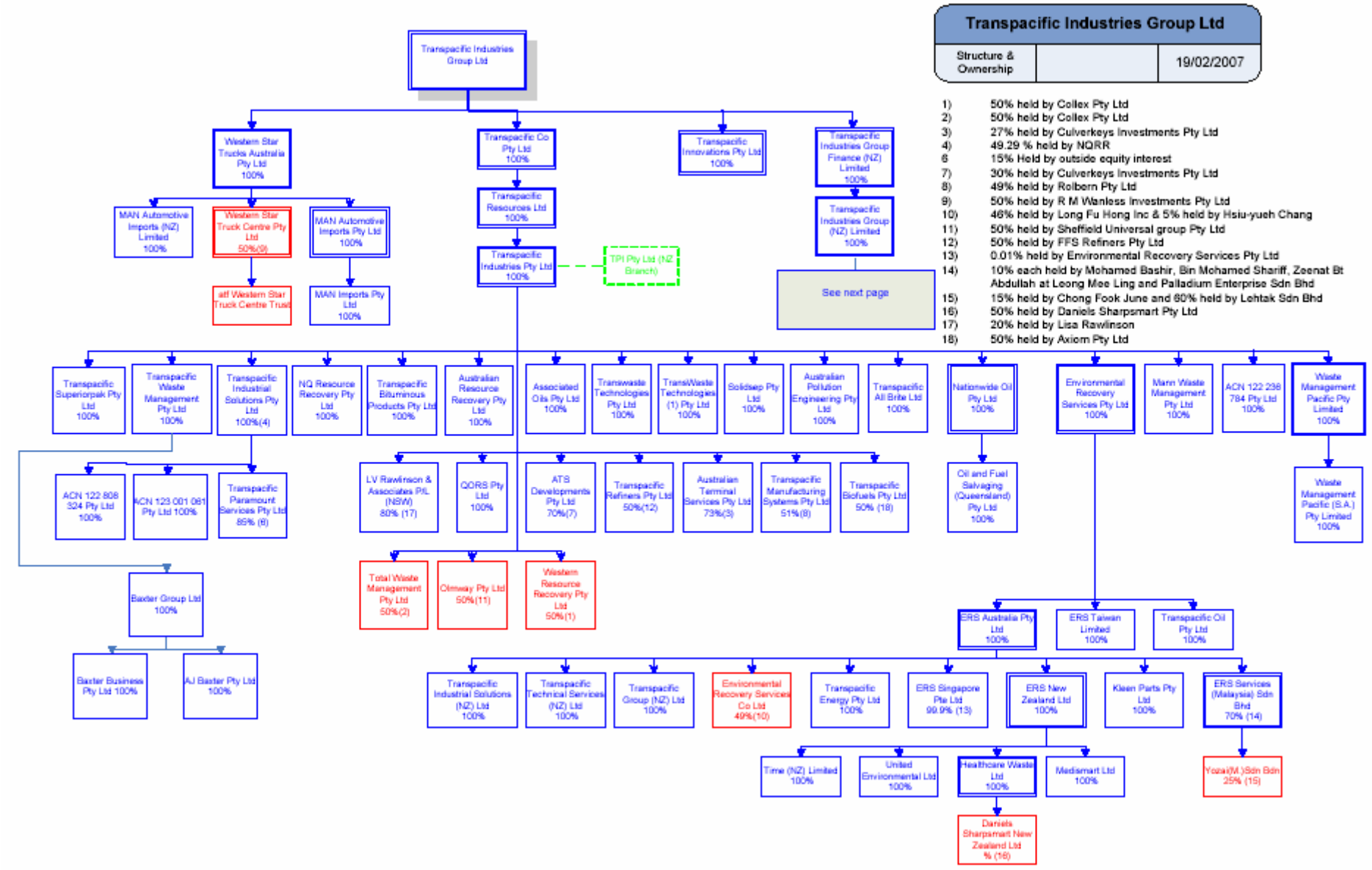
(b) there are a number of cartage companies with whom customers can contract directly to collect and take their intractable wastes to Medi-Chem's Penrose facility. In Auckland, these include R&S McGregor and Chemcouriers (both nationwide). Any cartage company can undertake this transportation so long as the consignment is appropriately packaged and labelled.

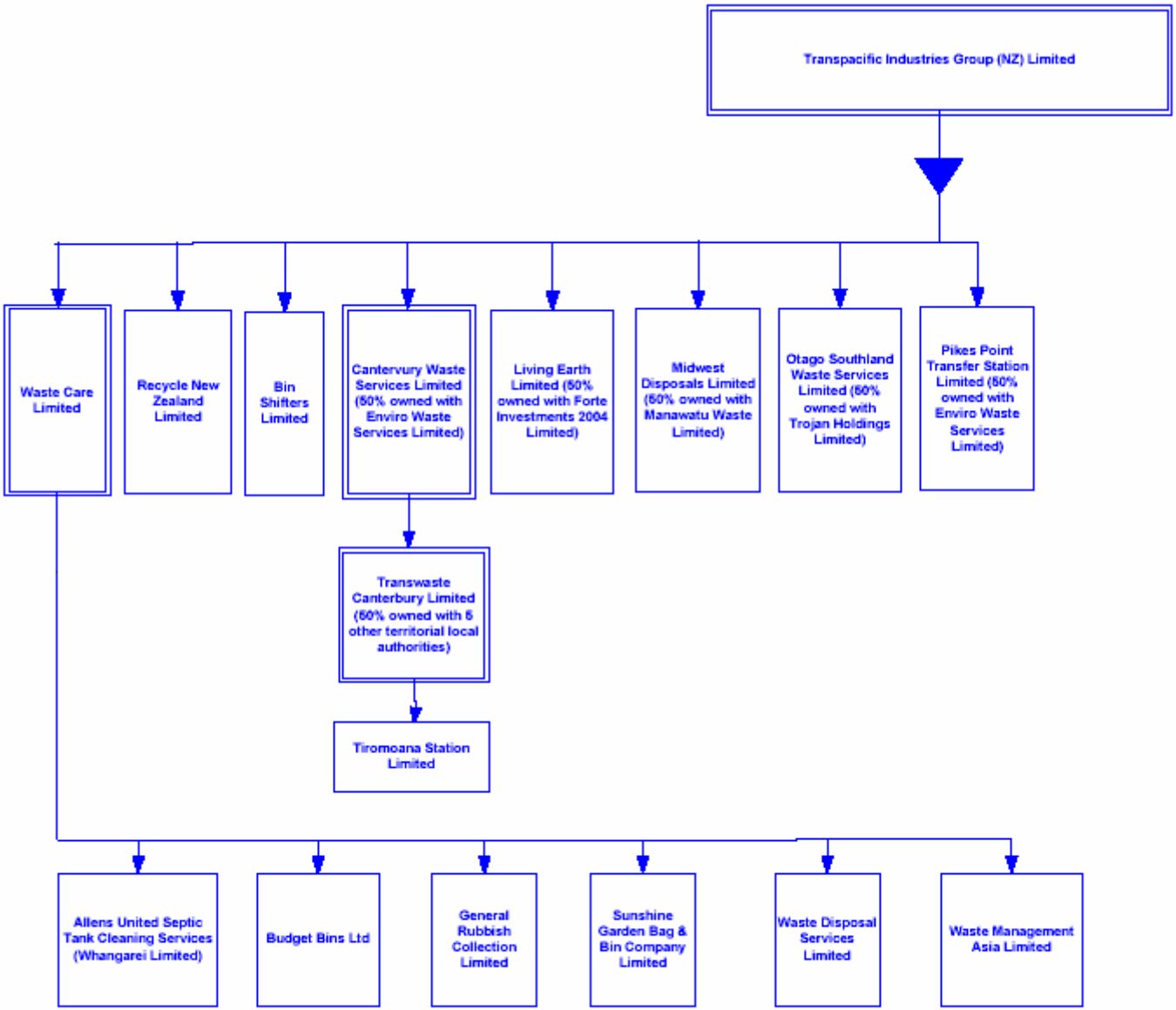
17.6 In Decision 442, the Commission noted[23], in relation to solvents, that although it is convenient for a supplier of spent solvent to have the solvent collected and transported, the transportation of the spent solvent may be carried out by

[23] At paragraph 47.

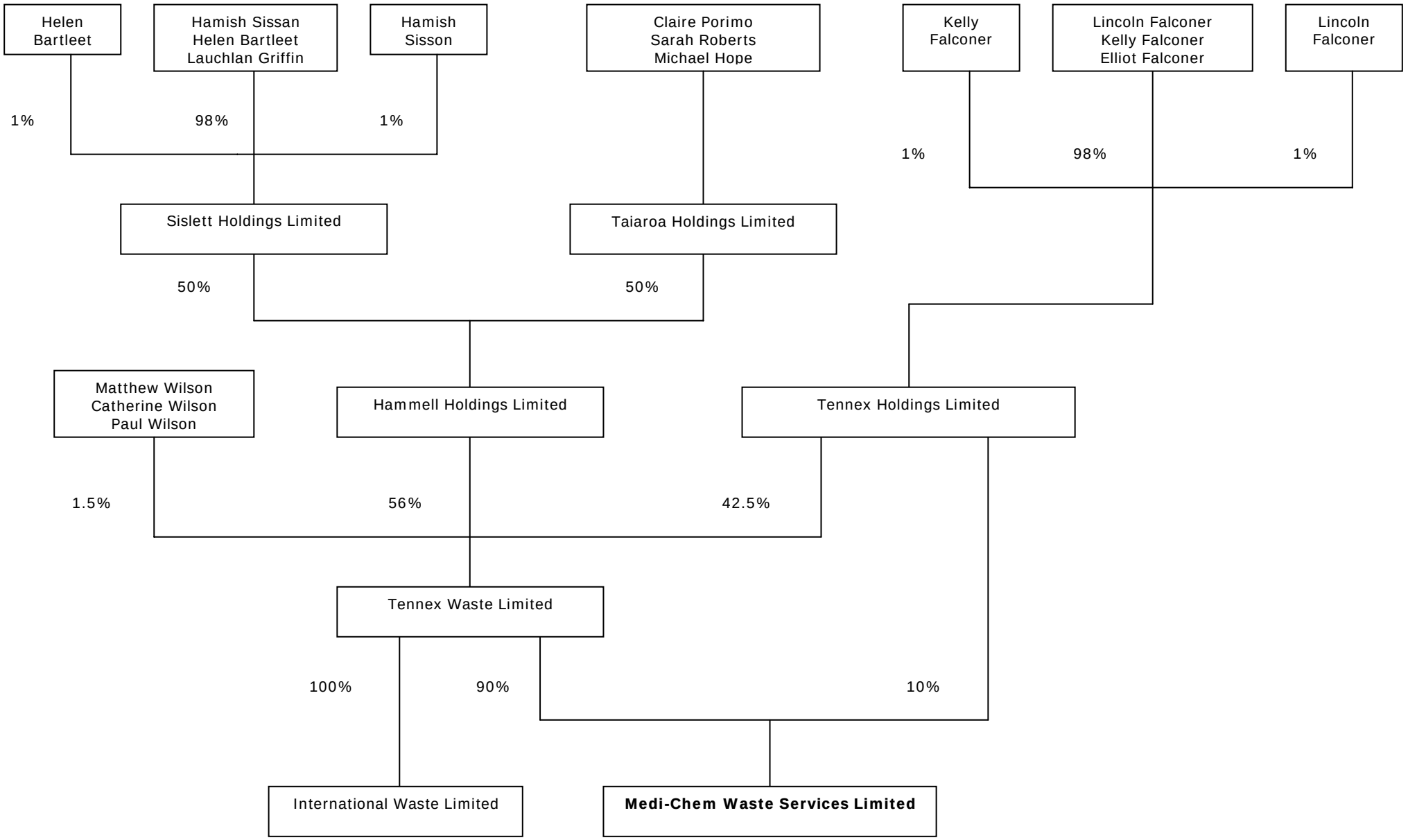
either the producer of the spent solvent or the recycler. This applies also to other hazardous wastes, including intractable wastes.

Schedule 1
Corporate structure diagrams for Transpacific Group and Transpacific Technical Services




Transpacific Industries Group (NZ) Limited
Waste Care Limited
Recycle New Zealand Limited
Bin Shifters Limited
Canterbury Waste Services Limited (50% owned with Enviro Waste Services Limited)
Living Earth Limited (50% owned with Forte Investments 2004 Limited)
Midwest Disposals Limited (50% owned with Manawatu Waste Limited)
Otago Southland Waste Services Limited (50% owned with Trojan Holdings Limited)
Pikes Point Transfer Station Limited (50% owned with Enviro Waste Services Limited)
Transwaste Canterbury Limited (50% owned with 6 other territorial local authorities)
Tiromoana Station Limited
Allens United Septic Tank Cleaning Services (Whangarei Limited)
Budget Bins Ltd
General Rubbish Collection Limited
Sunshine Garden Bag & Bin Company Limited
Waste Disposal Services Limited
Waste Management Asia Limited

Schedule 2
Ownership diagram for Medi-Chem Waste Services Limited

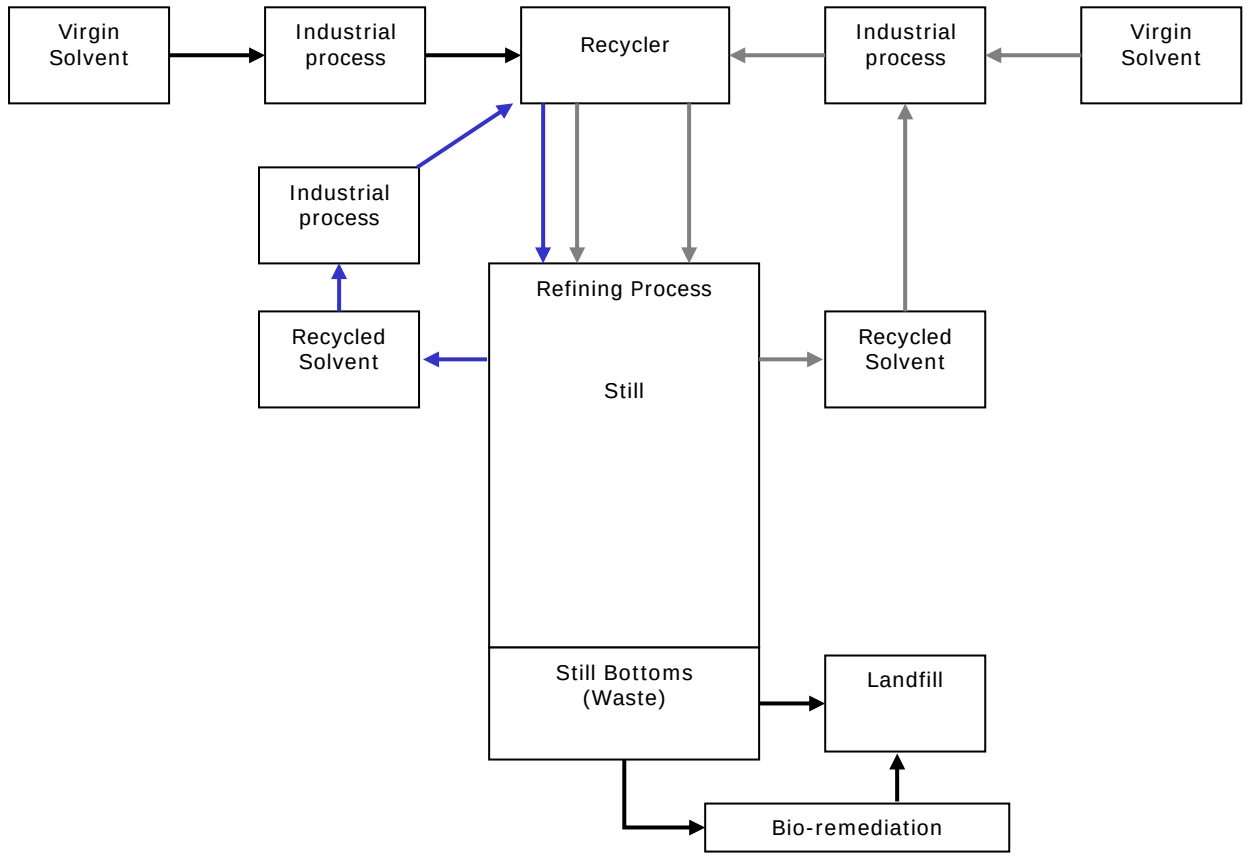


Schedule 3
Summary of permitted disposal methods for classes of hazardous waste under the Hazardous Substances (Classification) and Hazardous Substances (Disposal) Regulations.

Class	Description	Disposal Options	Restrictions
1	Explosive	▪ Treatment to change characteristics or composition so that substance no longer hazardous. ▪ Export substance from New Zealand.	▪ Cannot deposit in landfill or sewage facility. ▪ Detonation, deflagration or burning must be managed to comply with exposure limits prescribed by Regulations.
2, 3 & 4	Flammable	▪ Treatment to change characteristics or composition so that substance is no longer hazardous. ▪ Export substance from New Zealand.	▪ Cannot deposit in landfill or sewage facility. ▪ Burning of substance must be managed to comply with exposure limits prescribed by Regulations. ▪ Classes 2.1.1 (Gases), 2.1.2 (Aerosols), 3.1 (Liquids) and 4.1.1 (Readily Combustible) may be discharged into environment or deposited in a landfill if it will not contact a class 1 or 5 substance, there is no ignition source in the vicinity of the disposal site and a potential explosion will not exceed prescribed limits.
5	Capacity to Oxidise	▪ Treatment to change characteristics or composition so that substance is no longer hazardous. ▪ Export substance from New Zealand.	▪ Cannot deposit in landfill or sewage facility. ▪ Detonation, deflagration or controlled combustion must be managed to comply with exposure limits prescribed by the Regulations. ▪ Substance may be deposited in a landfill if it will not contact a class 1, 2, 3 or 4 substance, there is no ignition source in the vicinity of disposal site and a potential combustion will not exceed prescribed limits.
6	Toxic	▪ Treatment to change characteristics or composition so that substance is no longer hazardous. ▪ Discharge into environment so that concentration will not exceed tolerable exposure limit set by the Authority. ▪ Export substance from New Zealand.	▪ May deposit substance in a landfill, incinerator or sewage facility if this will change characteristics or composition to render substance no longer hazardous. This does not include dilution of substance with any other substance prior to discharge. ▪ May be discharged into environment without mixing if substance is rapidly degradable and products of degradation are not hazardous substances.
8	Corrosive	▪ Treatment to change characteristics or composition so that substance is no longer hazardous. ▪ Discharge into the environment so that concentration will not exceed tolerable exposure limit set by the Authority. ▪ Export the substance from New Zealand.	▪ May deposit substance in a landfill, incinerator or sewage facility if this will change characteristics or composition to render the substance no longer hazardous. ▪ May be discharged into environment without mixing if substance is rapidly degradable and products of degradation are not hazardous substances.

Class	Description	Disposal Options	Restrictions
9	Ecotoxic	▪ Treatment to change characteristics or composition so that substance is no longer hazardous. ▪ Discharge into environment so that concentration will not exceed tolerable exposure limit set by the Authority. ▪ Export the substance from New Zealand.	▪ May deposit substance in a landfill, incinerator or sewage facility if this will change characteristics or composition to render substance no longer hazardous. This does not include dilution of substance with any other substance prior to discharge. ▪ A Class 9.1 (Aquatic) substance containing a bio accumulative component that is not rapidly degradable must be treated prior to discharge to comply with prescribed Regulations.

Schedule 4
Use, recycling and disposal of solvents



Key

- Disposal of spent solvent
- Refine and return own solvent
- Supply and disposal of recycled solvent