

Competition for Scheduled Waste Collection Services - Substitutability

Prepared for

Transpacific Industries Group (NZ) Ltd

PUBLIC VERSION

August /September 2007

Covec is an applied economics practice that provides rigorous and independent analysis and advice. We have a reputation for producing high quality work that includes quantitative analysis and strategic insight. Our consultants solve problems arising from policy, legal, strategic, regulatory, market and environmental issues, and we provide advice to a broad range of companies and government agencies.

Covec develops strategies, designs policy, and produces forecasts, reports, expert testimony and training courses. Our commitment to high-quality, objective advice has provided confidence to some of the largest industrial and governmental organisations in Australasia.

Authorship

This document was written by John Small. For further information email john@covec.co.nz or phone (09) 916-1966

Disclaimer

Although every effort has been made to ensure the accuracy of the material and the integrity of the analysis presented herein, Covec Ltd accepts no liability for any actions taken on the basis of its contents.

This paper is provided in support of the applications for clearance by Transpacific Industries Group (NZ) Limited (TPI) in relation to the proposed acquisition of solid waste businesses of Enviro Waste Services Limited in Blenheim/Nelson, Timaru, Christchurch and Dunedin and without prejudice to any argument or material which may be used in support of TPI's appeal against Decision 604.

© Copyright 2007 Covec Ltd. All rights reserved.



Covec Limited Level 11 Gen-i tower 66 Wyndham Street
PO Box 3224 Shortland Street Auckland New Zealand
t: (09) 916-1970 f: (09) 916-1971 w: www.covec.co.nz

Contents

Executive Summary	1
1. Average Analysis	3
1.1. Prices	3
1.2. Quantities	4
1.3. Comparative Analysis.....	5
2. Marginal Analysis.....	7
2.1. Pricing Data	7
2.2. Nelson	8
2.3. Christchurch.....	9
2.4. Timaru.....	10
2.5. Dunedin	11

Executive Summary

In Decision 604, the Commerce Commission (the Commission) declined to grant clearance to the applicant, Transpacific Industries Group (NZ) Limited (TPI), to acquire a set of assets from Enviro Waste Services Limited. The Commission was not satisfied that the proposed transaction would not substantially lessen competition in some markets.

This report was commissioned to assist TPI in understanding the competitive impact of the transaction in respect of wheelie bin, FEL and gantry collection services. We have investigated the demand and cost conditions relevant to these collection services in each of the areas relevant to TPI's original application. Cost analysis is presented in a companion paper. This report investigates the substitutability of different collection methods.

Substitutability is relevant to market definition, and to the analysis of competitive constraints generally. In the Commission's view there are distinct markets for each major means of collection. The option for customers to switch from, say, FEL service to wheelie bin service in response to changes in relative prices was not viewed as being sufficiently attractive to place these services in the same market.

A significant reason for this conclusion was that TPI did not, in the Commission's view, provide clear evidence that customers do in fact switch between services. This was in turn caused in part by a lack of information about service uptake and pricing over time. In this report, we use cross-section data to investigate substitutability. By necessity, this work is based solely on TPI's data, so it is conducted at the level of the firm rather than the market.

We seek evidence relevant to the assessment of two hypotheses:

- That wheelie bin services are substitutes for FEL services; and
- That gantry services are substitutes for FEL services.

The rationale for these hypotheses is that wheelie bins are obviously suited for some small customers, gantry services are obviously suited to some large customers, and FEL services lie between these two extremes. While these propositions are not in dispute, the substantive question is whether, and to what degree, there is evidence of substitution on either 'side' of FEL services.

We have found reasonably strong evidence of substitution, using two forms of analysis. The first draws on average revenues and volumes across seven markets. It shows that usage tends to be concentrated in those services with the lowest relative collection prices measured in \$/tonne of waste. A more formal test, using rank correlations, shows there is approximately a 75% correlation between services that are the most expensive in a region also being the least heavily used (and vice versa).

This is complemented with analysis of TPI's current pricing structure for each service in the South Island. Using current prices avoids the averaging that occurs when total

service revenues are divided by tonnes of waste, and it also avoids complications that arise as price changes work their way through markets that are served under contract. Moreover, with access to TPI's pricing structure, it has been possible to explore the way relative service prices change with the volume of waste a customer has.

No service is always the cheapest in any region. As waste volumes change, so does the cheapest means of disposal. As expected, we found that wheelie bins tend to be very price competitive with FELs for reasonably small volumes of waste, but less so for larger volumes. Gantry service becomes a relatively more attractive option as waste volumes increase. As expected, the closeness of prices within particular waste volume ranges varies across regions.

Finally, using summary data on the characteristics of TPI's customers, we found that in all markets, substantial fractions of the FEL customer base have relatively small volumes. These customers occupy the volume ranges where wheelie bins are most price competitive. They are the most likely to switch to wheelie bins if the relative price of FEL service was to increase.

1. Average Analysis

It is generally useful to start empirical analysis by inspecting the data. To the extent that patterns are discernable, this can be a more easily digested method than econometric analysis. It can sometimes also reveal potential anomalies that would benefit from closer inspection.

Data were requested from TPI's managers of regional markets in the South and lower North Islands. To focus on substitutability between FELs and both of its adjacent products, attention was restricted to regions where TPI provided all three services of interest. There are seven such markets:

- Taupo;
- Kapiti;
- Taranaki;
- Wanganui;
- Nelson;
- Christchurch; and
- Dunedin.

For each regional market, and each service within it, information was provided on:

- Revenue; and
- Collection volumes (tonnes);

Using a weekly time interval, these data were converted into prices (\$/tonne) and quantities (tonnes). No adjustments were made for cost factors (eg disposal cost; kilometres run etc), because the objective here is to view these markets from the perspective of final consumers, who do not know or care about such things.

1.1. Prices

The prices for each service in each region are shown in Figure 1. Several things can be deduced from it. First, there is considerable price variation, in two ways:

- Across services within a region; and
- Across regions for a given service.

One reason for this variation is that the cost of disposal varies quite considerably across locations. Other factors may also contribute, but they are more speculative. One is history: prices in a region are probably somewhat sticky. Another possibility is that the intensity of competition may differ.

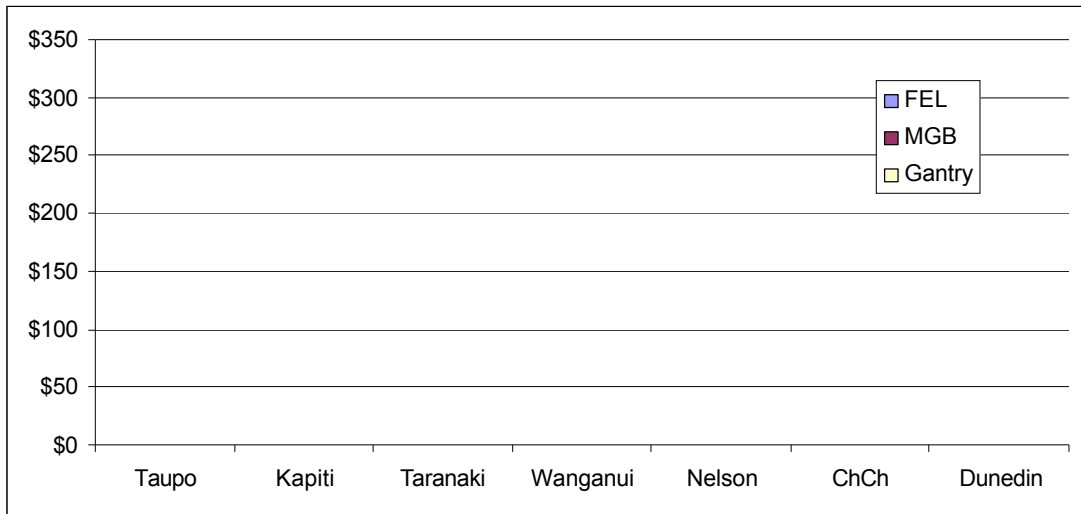


Figure 1 Revenue Per Tonne (source: TPI) [DATA ON CHART IS CONFIDENTIAL]

Whatever the reasons, the variation is very helpful for the analysis undertaken here, because it makes it possible to observe how customers have reacted to quite significant differences in relative prices across regions.

Relative prices are not merely different across regions, the *rankings* also change. For example, FEL services are the most expensive in four regions, but in two other regions they are the least expensive. Again, this extent of price variation should be very helpful.

1.2. Quantities

It is helpful to convert TPI's raw quantity data (which are measured in tonnes) into the shares each service has in a region. These are defined as the proportion of total tonnes each service contributed at the region level. In each location, market shares sum to one. These shares are shown in Figure 2.



Figure 2 Service Shares of TPI's Quantities (source: TPI) [DATA ON CHART IS CONFIDENTIAL]

It is immediately clear from Figure 2 that there is also considerable variation in customer uptake of particular services within and across regions. For all three services, it is easy to find a location where it has the largest share and another location where it has the smallest share.

1.3. Comparative Analysis

An interesting test is now available from viewing these two graphs, which is to compare the way prices and quantity shares are ranked across markets. This can be done visually, by comparing Figure 1 with Figure 2. The following facts can be observed:

- where wheelie bins are the most expensive ([REDACTED]) they have the smallest market shares;
- where wheelie bins are the least expensive ([REDACTED]), they have the highest market share;
- FEL service is the cheapest and most heavily used form of collection in [REDACTED] [REDACTED];
- FEL service is the most expensive and least heavily used service in [REDACTED] [REDACTED];
- Gantry services are the cheapest and most heavily services in [REDACTED]; and
- Gantry service is the most expensive and least used service in [REDACTED].

These observations suggest that substitution does indeed occur. There is also evidence pointing in the other direction however. For example, FEL is the most expensive service in [REDACTED], but also the most heavily used, notwithstanding the fact that market shares across services are quite similar for all three services in [REDACTED].

The weight of evidence does seem to point to there being a clear pattern of substitution. This conclusion is reinforced by a Spearman Rank Correlation test, which is a non-

parametric test¹ that relies solely on the rankings of variables. The outcome of this test is a single statistic that is bounded between -1 and 1. A perfect correlation in the ranks would result in a statistic equal to 1; if the ranks were perfectly negatively correlated, the statistic would be -1.

For each collection service method, the price rank (across regions) was compared with the quantity share rank. The resulting Spearman Rank Correlation statistics are:

- FEL: 0.82
- Wheelie bins: 0.73
- Gantry: 0.78

These statistics lend support to the overall conclusion from this analysis, which is that consumers do seem to view these services as substitutes.

¹ A non-parametric test does not rely on any particular assumptions about the randomness of variables. For example, normality is not required for such a test to be valid.

2. Marginal Analysis

To further investigate the substitutability of collection services, a forward looking and marginal analysis is useful. In this section, South Island service price data and information about the distribution of customers is used to gain a deeper understanding of the way wheelie bins, FEL, and gantry services can constrain one another.

The analysis in section 1 used average revenues and quantities for services in regions. It was helpful in revealing the way markets have responded to prices in the past. This section uses price book data (ie the prices customers would be quoted today) to examine in greater detail the specific circumstances of customers.

Pricing in this industry is not uniform. The price a customer is quoted depends on their volume of waste, and on the means and frequency of collection. Prices also vary over time. Where customers are contracted, it takes time for price changes to be implemented. As a result, average revenues per tonne are backward looking measures of prices.

It is of particular interest to understand whether and to what extent the prices of each service are similar for a customer. Some information of this type was sought by the Commission in the context of the original application by TPI which was the subject of Decision 604. However, the information sought and provided was limited, and there were some apparent inconsistencies in the data obtained by the Commission from different firms as reported in Decision 604, which are as discussed further in section 2.5 below.

As well as providing a clearer picture of relative prices, this section also uses data on the distribution of customer types. This is important to a competition analysis because it can help us understand whether there are groups of customers that are vulnerable to switching in response to particular relative price changes.

2.1. Pricing Data

We requested from TPI data that revealed the basis for pricing each of the three services of interest. The structure of pricing differs across services.

For wheelie bins pricing is linear except for volume discounts in some cases. For each of TPI's three wheelie bin operations in the South Island, there is a set price for collection of a single wheelie bin, and this is multiplied by the number of bins collected. Volume discounts are [REDACTED]. They are of different size in each of those markets, but in each case are introduced once a customer gets to [REDACTED].²

² All of the following analysis is done on a weekly basis.

FEL and gantry pricing has three components: bin hire; collection; and disposal. However these distinctions are not generally apparent to the customer, who simply gets a quote for service. These non-linearities mean that as weekly waste volumes increase, the tariff schedules have steps in them.

Waste volumes of up to 12m³ per week have been modelled here, in steps of ¼m³. For analytical ease, and without loss of generality, the size of a wheelie bin has been rounded from 0.24m³ to 0.25m³. For each waste volume, the price of the following services were calculated:

- Wheelie bin
- FEL with a 1.5m³ bin
- FEL with a 3m³ bin
- Gantry with a 3m³ bin
- Gantry with a 9m³ bin

The results are conveniently expressed graphically.

2.2. Nelson

Figure 3 shows the Nelson prices.

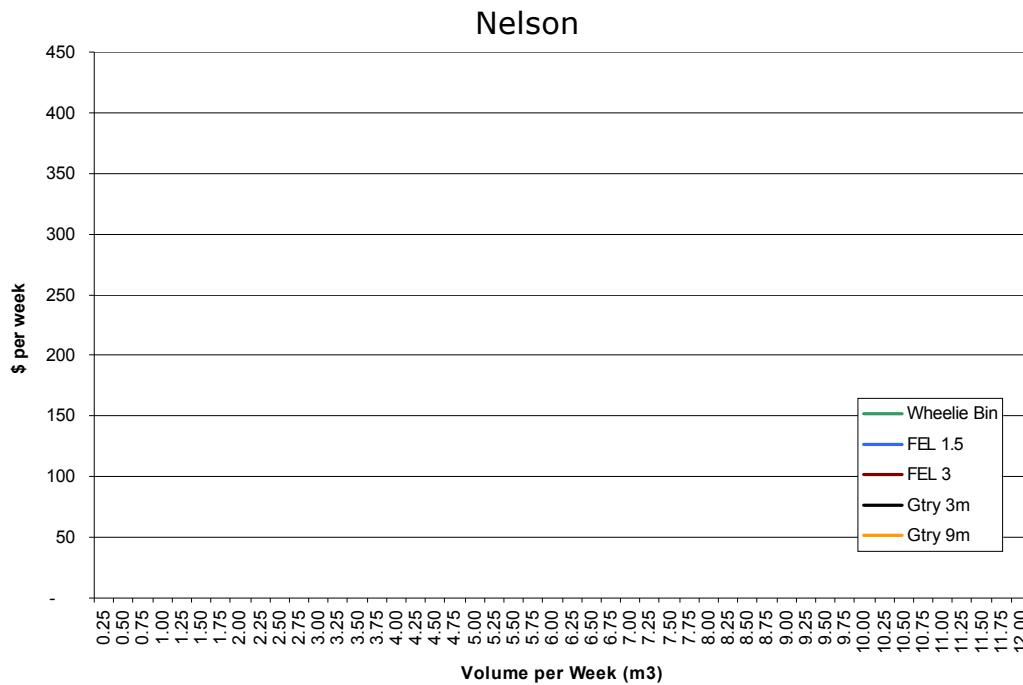


Figure 3 Service Prices in Nelson [DATA ON CHART IS CONFIDENTIAL]

There are no [REDACTED] [REDACTED]. Wheelie bin service is cheaper than FEL service for most customers [REDACTED], though someone with

[redacted] per week would save [redacted] per week by using a [redacted] FEL service. Wheelie bin service is also the cheapest for customers in the range [redacted] inclusive. It is not until volumes exceed [redacted] that wheelie bins start to become less competitive with FEL service. Gantry service tends to be more expensive, being most competitive with wheelie bins and FELs in the range of [redacted].

2.2.1. Customer Distributions in Nelson

The diversity of customer types makes it difficult to obtain data that summarises the distribution of customers. We were able to get information on FEL service customers however. It shows that at least [redacted] of TPI's FEL customers in Nelson have up to 1.5m³/week, and at least [redacted] more lie in the 1.5-3m³/week range.³ All of these customers ([redacted] of total FEL customers) are in the range where there is a close similarity between FEL and wheelie bin prices.

2.3. Christchurch

The data for Christchurch are in Figure 4. Here, the impact of a volume discount for wheelie bin service can be clearly seen, as the green line dips at [redacted]. In reality, there is probably a less extreme dip than is modelled here (eg some discount may be available at less than [redacted] bins).

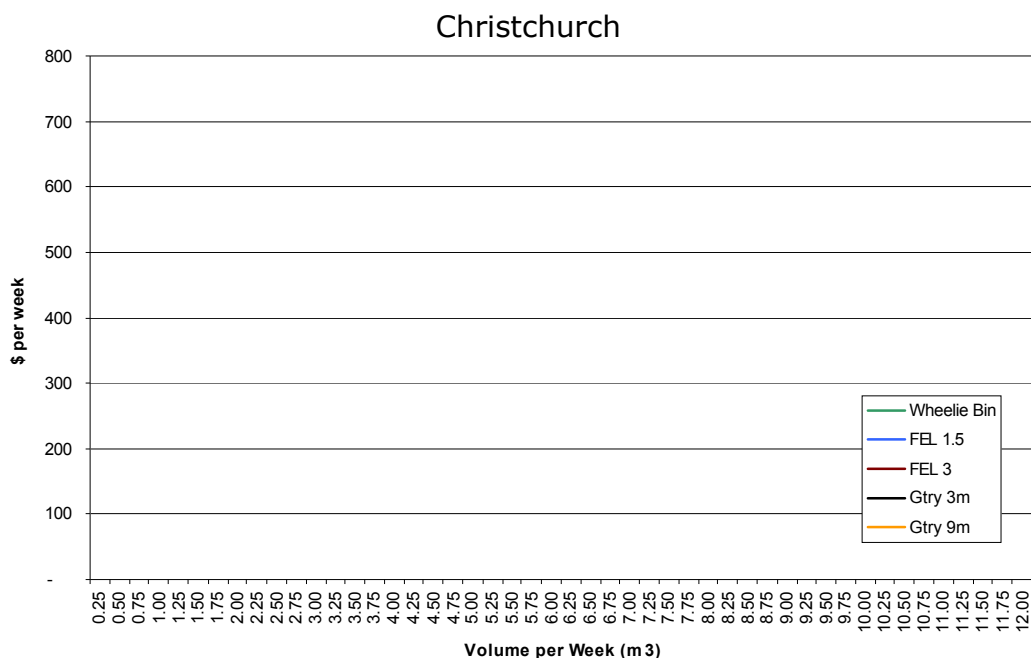


Figure 4 Service Prices in Christchurch [DATA ON CHART IS CONFIDENTIAL].

³ One of the reasons we cannot be more precise is that a significant number of bins are “on call” so their collection frequency (and hence total volume) is not known.

The basic structure of the Nelson market is repeated here, with FEL service prices being alternatively cheaper and more expensive than wheelie bins. The zones in which wheelie bins are cheaper are smaller and fewer than is the case for Nelson, but pricing is still very similar through to around [REDACTED]. Gantry service prices are materially closer to FEL prices in Christchurch than they are in Nelson.

2.3.1. Customer Distributions in Christchurch

In Christchurch, at least [REDACTED] of TPI's FEL customers have up to 1.5m³/week, and at least [REDACTED] more lie in the 1.5-3m³/week range. In aggregate, at least [REDACTED] of FEL customers are in the range where there is a close similarity between FEL and wheelie bin prices.

2.4. Timaru

The Timaru data are shown in Figure 5. TPI has no wheelie bin service in this location, so we cannot observe the similarity or otherwise of pricing between that service and others.

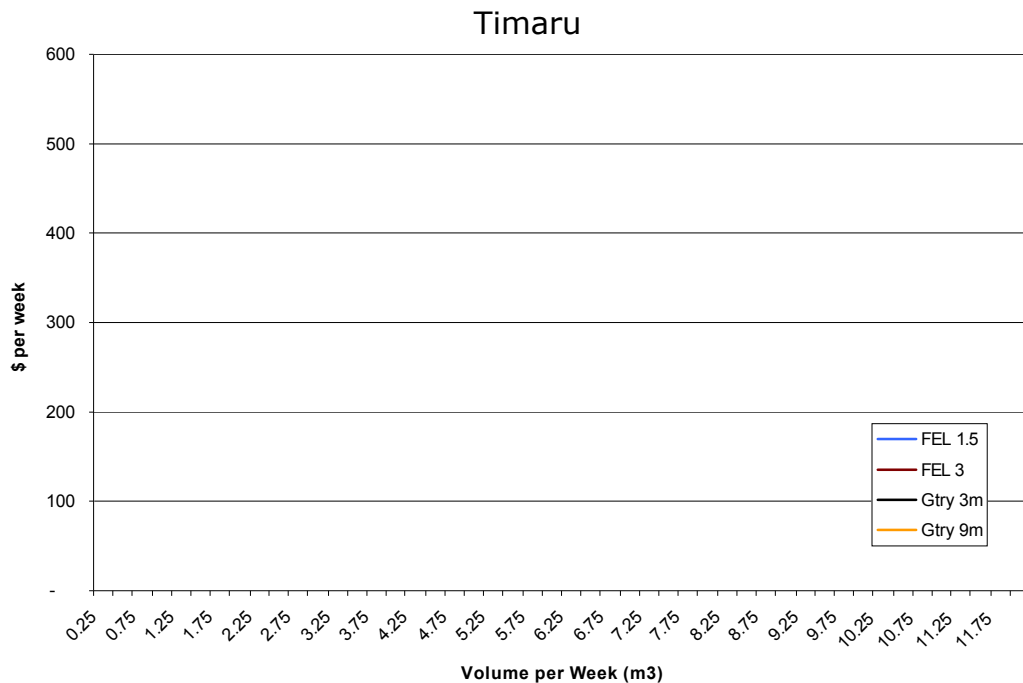


Figure 5 Service Prices in Timaru [DATA ON CHART IS CONFIDENTIAL]

The most interesting feature of these data however is that the gantry service is much more competitive with FELs than was apparent in Christchurch and Nelson. It is clearly the cheapest of any service for two specific volumes (just over [REDACTED] and just over [REDACTED]), and is reasonably close in price for many others up to around [REDACTED].

2.4.1. Customer Distributions in Timaru

In Timaru, at least [REDACTED] of TPI's FEL customers have up to 1.5m³/week, and at least [REDACTED] more lie in the 1.5-3m³/week range. This suggests that a reasonably large share of FEL customers are in the range where gantry service prices are fairly close to those of FEL.

2.5. Dunedin

FEL service prices in the Dunedin market were discussed in Decision 604, in two places. In paragraph 142, TPI's data was discussed, and it was clear that for 3m³/week, there was a relatively minor difference in price as between wheelie bin service and FEL service (Gantry was materially more expensive for this volume). A remarkably similar analysis was presented in paragraph 165 which used data from EnviroWaste. It showed a very significant difference in price for a 3m³/week customer as between wheelie bin and FEL service.

The reason for this major difference needs to be understood. Its source appears to be the price of wheelie bin service quoted by EnviroWaste: EnviroWaste's quoted price (from paragraph 165) is [REDACTED]. Not having knowledge of EnviroWaste's data, this analysis cannot resolve the matter. But either EnviroWaste's pricing for wheelie bin services must be far in excess of TPI's, which is possible but unlikely, or the EnviroWaste price in the table is not what is in fact being charged in the market.

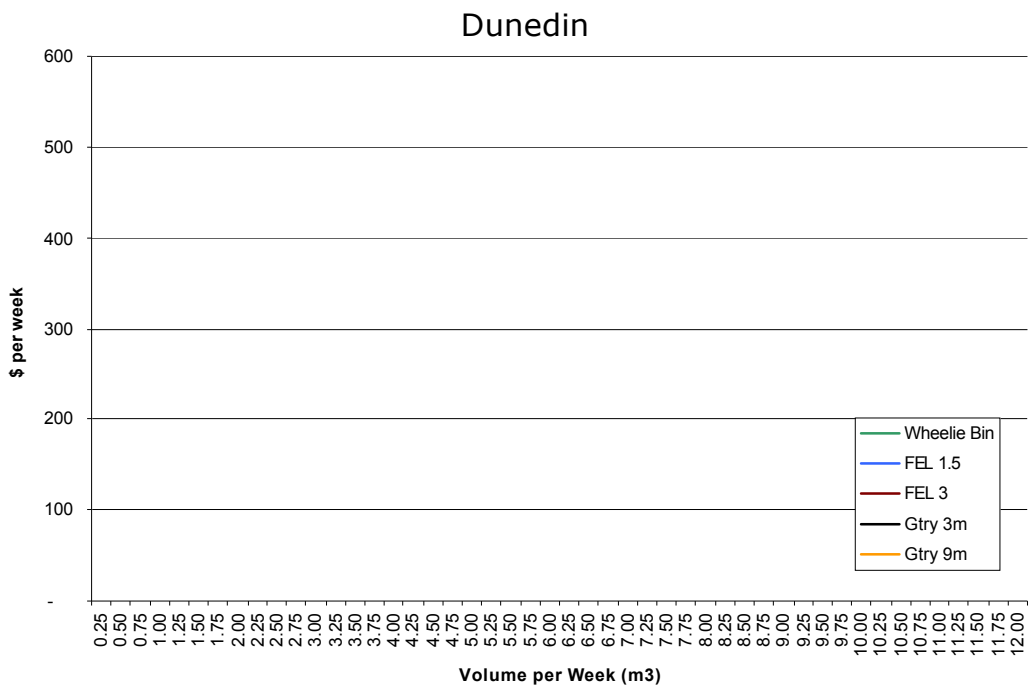


Figure 6 Service Prices for Dunedin [DATA ON CHART IS CONFIDENTIAL]

The TPI price data for Dunedin are shown in Figure 6. Here the relationship between wheelie bin and FEL prices is very close, similar to what was observed in Nelson. Additionally, gantry service is quite competitive with these, especially in the [] range. This suggests a much greater potential for price-responsive substitution than the Commission identified in Decision 604, relying in part on the reported EnviroWaste pricing for these services..

2.5.1. Customer Distributions in Dunedin

In Dunedin, at least [] of TPI's FEL customers have up to 1.5m³/week, and at least [] more lie in the 1.5-3m³/week range. This suggests that a reasonably large share of FEL customers are in the range where wheelie bin and FEL service prices are fairly close to one another, and there is clear potential for price-responsive substitution between the services.