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Final Report

prepared for

Irish Waste Management Association

An Assessment of the Economic Rationale for Altering the Structure of the Irish Household Waste Collection Market

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Executive Summary

DKM have been asked to analyse the economic aspects of household waste collection in Ireland, in the context of the commitment to alter the market structure in the current Programme for Government, and the subsequent discussion document published by the DECLG. This in turn seems to be based on a perception that the current market structure ("competition in the market") is inefficient, and that savings can be made for consumers by moving to a competitive tendering ("competition for the market") structure.

As part of this study, we have reviewed the debate to date in Ireland, as well as international literature on the issue, undertaken a comprehensive survey of IWMA members on their waste collection and other activities, and undertaken detailed case studies of a number of waste collection services around the country, ranging from large urban environments to mostly rural environments.

It is worth remembering that Ireland is something of an international outlier in terms of household waste collection services, for two reasons:

(i) We have moved from public provision to openly competitive private provision (of all aspects of waste management, not just collection), over the last two decades; therefore a different market dynamic has developed here compared to other countries.

(ii) Consumers in Ireland are charged directly for waste collection services, often with a specific use-related element.

These points need to be kept in mind when comparing Ireland with other jurisdictions, and recommending policy based on experience elsewhere.

In summary, we find that:

- While competition for the market is the international norm, and a number of influential commentators have recommended it for Ireland, attitudes have evolved in recent years. Notably, the Competition Authority now indicates:

  "*The Authority recommends that competitive tendering is preferable where side-by-side competition does not appear to work well. The Competition Authority is generally in favour of retaining side-by-side competition, but only where it appears to be working well*".

  and

  "*Side-by-side competition is a more flexible and dynamic form of competition than competitive tendering. It provides a constant competitive constraint, rather than competition every few years, and is more responsive to changing technologies and market circumstances. It may also encourage greater innovation in the industry."*

- International evidence clearly points to the risk of increased concentration and a reduction in competition in tendered-for waste collection services (and other public services) over time. Given our demographic/spatial characteristics, Ireland would be vulnerable to this phenomenon.

- Analysis of the current market indicates a large number of firms operating in a dynamic and varied marketplace, which has been characterised by increased innovation and reduced costs for consumers over the years (where costs have risen for consumers, it has been in the context of previous public sector providers not charging the full cost of the service).

- There is a high degree of horizontal and vertical integration in the Irish waste management sector, reflective of the prominent role of the private sector, and the scale of the market. The impacts on the entire sector need to be considered when proposing to alter one element (i.e. collection).

- There is no evidence that household waste collection in Ireland represents a natural monopoly. Indeed, all the evidence is to the contrary. In virtually all local authority areas there are several firms offering services. Our survey found no cases of monopoly provision in the market. There is a large number of firms who have been operating successfully for a decade or more, under competitive conditions, with strong dynamism in the market, and falling prices in recent years. These are not the characteristics of a natural monopoly.

- Likewise, the case-study evidence indicates that economies of density, while present, are limited, and are not significant enough to justify the proposed intervention in the market.

- Our survey indicates that for counties where we had survey responses, 100% geographic coverage of the market is the norm. Lack of coverage only applies in extreme circumstances such as very mountainous environments which it is not possible to access with a waste truck. In these circumstances alternative arrangements such as bring points are generally in place. This was the case when local authorities provided the service, and would remain the case even if the service was put out to tender.

- According to the 2009 EPA National Waste Report, less than 8% of household waste was not collected and 19% of households did not avail of, or were not offered, a collection service. The survey evidence and feedback from market participants would indicate, however, that in the vast majority of cases, the existence of households which do not use a collection service reflects the personal choice of the householder and not a lack of access to a collection service.

- DKM also considered whether affordability might be a factor in explaining the variation in collection uptake rates reported by the EPA by comparing the EPA figures with figures on disposable income per head for each county. It is clear from these figures

that there is no significant relationship or correlation between the uptake of household waste collection services and disposable income.

- In view of these findings, it would not seem appropriate, therefore, to attempt to use supply-side measures such as altering the structure of the market for household waste collection to try to address issues of consumer behaviour. It may be more appropriate to use other policy instruments, such as a requirement for households to use a recognised waste disposal mechanism, if the Government is concerned about the low level of uptake of waste collection services in some counties in Ireland.

- Prices charged to consumers by private providers of waste collection services have fallen significantly in recent years, despite increases in transport and other costs. This is partly reflective of falling landfill gate fees. The fact that these savings have been passed on to consumers is a demonstration of the benefits of the current competitive structure. It is open to question whether this would have been the case if the service were contracted out to regulated monopoly suppliers.

- It has been argued (by the 2009 *International Review* among others) that prices to consumers in Ireland are out of line with other jurisdictions, and that competitive tendering would act to remedy this. It is beyond the scope of this study to analyze costs and pricing in other jurisdictions.

- However, it has been pointed out by the industry that the *International Review* made a number of errors in its analysis of Irish prices and costs, and our findings confirm this. We would also point out that a number of factors make it difficult to compare Irish and other charging systems, not least scale, spatial development patterns (even in rural areas), and the charging system used in Ireland. Furthermore, as indicated, prices have fallen significantly in Ireland since the international review was published.

- A number of factors point to the potential for competitive tendering to cost more to consumers and taxpayers rather than less, notably:

  - The loss of dynamic and allocative efficiency.
  - The risk of the emergence of highly concentrated markets and the elimination of competition in tendered-for services over the long run.
  - Artificial splitting of household and commercial waste collection services is likely to increase costs for both sets of customers, particularly in less urban areas where mixed services are the norm.
  - The additional costs of designing, running and enforcing competitive tenders, and of preparing bids to participate in these tenders, as well as the risks of the tendering process not delivering the expected results for the consumer, due to errors, poor design, challenges, etc.
  - The cost of waivers, if these are to be included in the tender. Specifically with respect to waivers we would recommend that affordability issues be dealt with via the social welfare system, as is the case with other public utilities.

In summary, the economic case underlining the commitment in the Programme for Government and the subsequent discussion document, that the current system is not efficient and is costing consumers too much, is far from proved. On the contrary, all the evidence is that the system is working well, providing choice and service and passing cost reductions on to consumers, as one would expect in a properly working market.

The proposed alternative, of competitive tendering for the market, entails a number of significant risks that costs will rise rather than fall. It will also eliminate choice for the consumer, and will undermine the business model of many if not most of the companies currently in the market. These companies have invested in infrastructure and are providing significant employment throughout the country, in the legitimate expectation that they were acting in accordance with public policy.

Section 1: Introduction

1.1 Background

The starting point of the current debate over the market structure for household waste collection services can be considered to be the current Programme for Government[1], which contains the following commitment:

> *"We will introduce competitive tendering for local waste collection services where the private sector and local authorities can bid to provide services in an entire local authority area for a set time frame. Tender bids will be judged and awarded by the new utilities regulator. Contracts would be required to stipulate a guaranteed service level to be offered. A public service obligation would include a fee waiver scheme for low-income households. Licences would be flexible enough to allow for localised waste management needs and opportunities*".

This was followed by the publication of a discussion document by the Department of the Environment, Community & Local Government (DECLG) in June 2011, entitled *Altering the Structure of Household Waste Collection Markets*[2], which launched a public consultation process.

What is at issue is a proposed change to the household waste collection market structure, from the current open competition ('competition in the market') structure to a system of competitive tendering for each local authority area ('competition for the market').

Such a move would represent a very significant change in the household waste collection sector. It would have major impacts on the commercial operations of existing service providers and potentially, on the waste management infrastructure in Ireland. It is vitally important therefore that these proposed changes are rigorously evaluated to ensure that the full impacts on the market are understood.

Given the investment that private operators – both large and small - have made in the delivery of household waste collection services and in the wider waste management infrastructure, and the numbers of direct and indirect jobs in all parts of the country that could be affected by a change in industry structure, it is essential that any intervention in the market is based on robust and comprehensive evidence that the proposed alternative structure would deliver more effective and efficient outcomes for consumers[3].

In this context, DKM has been commissioned by the Irish Waste Management Association (**IWMA**) to undertake an independent economic assessment of the Government's proposals to alter the

[1] http://www.taoiseach.gov.ie/eng/Publications/Publications_2011/Programme_for_Government_2011.pdf (page 60)
[2] http://www.environ.ie/en/Publications/Environment/Waste/FileDownLoad,27003,en.pdf
[3] Under the Better Regulation Initiative, sponsoring Departments are obliged to undertake a Regulatory Impact Analysis where proposed changes in regulations are likely to have a significant impact on a sector or industry. As part of this process, they are required to examine the proposed regulation/policy change in terms of its **a) necessity; b) effectiveness; c) proportionality**; as well as issues around **d) transparency; e) accountability and f) consistency** with other policy/regulatory measures.

structure of the household waste collection market in Ireland and in particular, to introduce franchise bidding to provide household waste services[4].

This assessment focuses, in particular, on whether there is sufficient evidence to conclude that competition for the market would deliver a substantially more efficient outcome than the current system of competition in the market and whether any potential efficiencies are material enough to justify this intervention in the market.

1.2 Approach and Methodology

The aim of this study is, therefore, to examine the potential economic case for restructuring the household waste collection sector. Specifically, it focuses on:

- Whether market intervention is either necessary or justified i.e. is there evidence of actual **Market Failure**?
- Could the market for household waste collection be considered to be a **Natural Monopoly** i.e. are **Economies of Scale and Density** so significant that there is only room in each local authority area for one provider to offer services?
- Would a change in market structure and the introduction of competition for the market represent a proportionate response to perceived market failure? Is there sufficient evidence to **justify the cost, disruption and risks involved**?
- Are there likely to be wider impacts on the waste management sector? What are the potential impacts on **Economies of Scope** (vertical & horizontal integration) or on other elements of the waste management industry?

The approach and methodology adopted in undertaking the study encompassed a number of elements. This included a **survey of IWMA members** to gather information on current market structures; on the geographical location of firms; evidence of market entry and exit; the volumes of household waste collected; urban and rural customers; market shares; numbers of competitors; number of waiver customers etc.

The primary focus of the study is on providers of kerbside household waste collection services. However, many companies also offer services to commercial customers and, particularly in rural areas, may have "mixed-routes" where they collect from both types of customers using the same equipment. Where possible, companies have been asked to indicate the relative share of each type of customer in each of the areas that they operate.

In this context too, it is important to note that IWMA members have been asked to provide information on kerb-side collections from households only – skip collections of household waste or waste collected from apartment buildings have in general been excluded as we understand that these would not form part of the "market" which could be subject to competitive tendering[5].

[4] http://www.environ.ie/en/Publications/Environment/Waste/FileDownLoad,27003,en.pdf

[5] Waste from apartment buildings is generally treated as part of the commercial waste stream from an operational point of view, because of its volume and how it is presented.

In addition to information on their waste collection services, waste companies were also asked about their other waste management services and infrastructure to obtain information on the degree of horizontal and vertical integration within the industry.

Questionnaires were circulated to IWMA members operating in the household waste sector. A total of 28 waste collection companies were surveyed, of which 18 completed the questionnaires (i.e. a response rate of 64%). It is estimated that these respondents cover over 40% of the household waste collection market in Ireland.

In addition to the survey, **more detailed case studies** of the operations of a cross-section of waste collection companies were undertaken. Companies of varying sizes and operating in different parts of the country and in different "types" of market (e.g. City, urban, rural, mixed) were included in this part of the study. The aim was to examine whether the sector could be classed as a natural monopoly by identifying the minimum efficient scale of operation necessary for a service provider in these different types of markets. In addition, the consultants also sought to isolate the potential impact of economies of density on operating costs to determine whether these are, in practice, likely to be material in terms of overall sectoral efficiency.

1.3 Report Layout

The report is set out as follows:

Section 2 describes the debate in Ireland to date regarding the household waste collection market structure, discusses the economic rationale for market intervention, and places the Department's discussion document in this context.

Section 3 presents the result of our survey of IWMA members.

Section 4 explores whether the household waste collection market represents a natural monopoly, and incorporates our case studies of particular markets.

Section 5 compares competition in the market with competition for the market.

Section 6 sets out the conclusions from our analysis.

Section 2: The Current Debate in Ireland

2.1 Introduction

While the origin of the current debate has been the Programme for Government commitment and the Department's discussion document, the debate regarding the structure of the household waste collection market in Ireland has been in train for over a decade, reflecting the progressive withdrawal of the public sector from the market since the mid-1990s. Without wishing to revisit this history in detail, it is worthwhile recalling briefly the key elements of the evolution of thought in relation to this issue in Ireland, and also to consider the general economic rationale for competition and market intervention. We then place the Department's discussion document in this context.

2.2 The Economic Rationale for Market Intervention

The Benefits of Competition

Competition is a basic mechanism of the market economy and encourages companies to provide consumers products that consumers want. It encourages innovation, and pushes down prices. In order to be effective, competition needs suppliers who are independent of each other, each subject to the competitive pressure exerted by the others. [6]

(EU DG Competition)

Economic theory tells us that, in general, consumers benefit when companies are forced to compete head on with each other. They benefit not only from increased choice but also from lower prices and better quality products and services. This reflects the fact that firms in a competitive environment have an incentive to drive down costs to enable them to offer lower prices to customers and to constantly strive to offer new and improved quality products and services to gain, or maintain, their market share. In addition, by encouraging enterprises to operate more effectively and efficiently, the competitive process helps to boost overall productivity and enhances economic competitiveness – ultimately helping to drive economic growth.

According to economic theory, therefore, competition leads to:

- **Productive efficiency** – as firms in a competitive environment have the incentive to drive down costs to produce at the lowest possible costs
- **Allocative efficiency** – as firms in a competitive environment have an incentive to set their prices close to the actual cost of production
- **Dynamic efficiency** – as, over time, firms in a competitive environment have an incentive to continually strive to innovate and develop new and improved products and services

In contrast, under a monopoly situation, prices are likely to be higher, output lower and quality poorer than under competition. The monopolist will not face the same incentive or pressure to

[6] http://ec.europa.eu/competition/antitrust/overview_en.html

operate efficiently[7], to innovate or to introduce new or better products. This is the basis for the famous quote from the economist J.R. Hicks that "*the best of all monopoly profits is a quiet life*"[8]

The consumer welfare-enhancing benefits of competition provide the rationale for opening up traditional public services or state-owned industries to the competitive pressures of the private sector with a view to achieving greater innovation, diversity and responsiveness to public need. They underpin national and EU competition law which aims to ensure that robust rivalry exists between firms as this, in turn, is the most effective means of ensuring that markets work well for consumers.

As highlighted by the UK Office of Fair Trading (OFT), for example, "*When markets are working well, firms compete to win business by achieving the lowest level of cost and prices, developing better products and services or exploiting their strengths, skills, and other advantages to meet consumers' needs more effectively than their rivals. This process encourages innovation and provides consumers with increased choice.*"[9]

Market Failure

While free and un-hindered competition is the ideal, economic theory also acknowledges that there may be instances where markets, left to their own devices, do not work effectively or the competitive process does not lead to the best outcome for consumers or the wider society. In these circumstances, markets fail to deliver an efficient allocation of resources and the result is a loss of economic and social welfare.

The existence of market failure is often used as a justification for government intervention in a market, and indeed, in many circumstances, State intervention may increase efficiency by correcting for these market failures and may improve the functioning of markets. However, it is essential that governments are extremely careful before intervening and that any actions are targeted and proportionate to ensure that they deliver effective outcomes and do not, in themselves, result in market distortions. As highlighted by the UK OFT "*restrictions on competition ... can arise through Government regulation or public policy. Whether intentionally or not, public sector restrictions may create barriers to entry into markets, distort the conditions under which market players compete, prevent competitive markets from developing*."[10]

Market failure can arise for a number of different reasons. This includes information asymmetries[11], non-competitive markets or monopoly situations, very large economies of scale, the existence of

[7] This is sometimes referred to as x-inefficiency in the economic theory.

8 J.R. Hicks: 'Annual Survey of Economic Theory: The Theory of Monopoly', *Econometrica*, Vol. 3, No. 1 (Jan., 1935), pp. 1-20.

[9] http://www.oft.gov.uk/shared_oft/economic_research/oft887.pdf

[10] Op cit

[11] Consumers drive competition through the choices they make. If they are unable to make or act on informed choices, then competition will be distorted. When information asymmetry exists, consumers find it very difficult to make properly informed choices about the merits of the goods and services on offer because of the complexity of products or because they do not have the technical knowledge to enable them to judge the quality of the product or service they are purchasing. This could include for example, legal advice, financial products or technical equipment.

externalities[12], or in the case of public goods[13]. More generally, economic theory sometimes draws a distinction between market failure that arises because there is *too little rivalry* in a market (i.e. monopoly, public goods) and market failure that arises because there is *too much or the wrong type of rivalry* between firms (e.g. information asymmetries or economies of scales).

There are clear parallels with the current context, and we return to these below, but first, we review the historic debate over the household waste collection market in Ireland.

2.3 Previous Reports and Commentaries on Market Structure in Ireland

A starting point to the debate can be considered to be the OECD 2000 paper *Competition in Local Services: Solid Waste Management*[14]. This recommended competitive tendering for the household collection market, citing economies of density as a strong deciding factor, and quoted a 1990s Finnish study and a 1970s US study which indicated that prices were higher where there was competition in the market, albeit it did note that "the results of this survey are questioned by private operators in Finland." (p.28)

It also states however:

> *"The marginal cost of collecting waste from an additional house is small when the house is already passed by a waste-collection vehicle, provided the additional waste collected is within the capacity of the vehicle. In addition, there are significant economies of density, provided the collection frequency is at sufficiently spaced intervals that a waste is collected from virtually every house on each collection round."*

And

> "*Although there are clear economies of density, the economies of scale in waste collection are small and linked to the fixed minimum efficient size of garbage trucks." (p.25)*

These quotes highlight two important provisos which are relevant in the Irish context: the limitations placed by truck capacity (marginal costs are only low if the operator can make use of unused truck capacity), and the requirement that collections are made from all, or almost all, houses on each route. This is often not the case in Ireland, given the popularity of use-related charging, which encourages bins to be presented for collection only when full or near full, and is unusual in an international context.

We note further, that the report states in relation to the Irish market:

> *"Ireland responded that most local authorities in Ireland have contracted out the service of waste collection. This has lead* (sic.) *to gains in quality and efficiency, but not in the prices to consumers. Nevertheless consumers are satisfied because waste is collected when on*

[12] Externalities refer to other costs of production that are not fully captured in the private costs of production but may be borne by the wider society e.g. pollution.
[13] For example, street lighting, defence etc.
[14] http://www.oecd.org/dataoecd/34/51/1920304.pdf.

> *schedule, even on public holidays, in dramatic contrast to previous system which was universally unreliable." (p.175)*

We further note that the basis for the findings of the Finnish study quoted by the OECD has been disputed, in particular that private sector price levels were overstated, and market sizes were not comparable.

The next significant development at an Irish level was the 2005 Competition Authority investigation of the waste collection market in Northeast Wicklow[15]. Greenstar was deemed to be dominant in the market as it was the only operator in Northeast Wicklow at the time, and there had been no new entry since 2000. Following complaints of high prices and abuse of dominance, the Authority undertook an investigation, but concluded that:

> *"The evidence does not substantiate the allegation that Greenstar's prices are unrelated to the social value of the service provided or to the cost involved in providing the service in question. Nor is it the case that Greenstar's prices are significantly higher than the prices charged by other private operators; they are in some cases cheaper than those charged by other private operators in the State."*

This is a notable conclusion for a market with effectively a monopoly supplier and no active competition for a number of years[16].

However, the Authority did conclude also that:

> *"Nevertheless, on the basis of The Competition Authority's extensive enquiries into household waste collection, it appears that the market for household waste collection is not working well for consumers. …… international experience demonstrates that competitive tendering is the best method of ensuring that household waste collection providers deliver consumers good service at competitive prices. This system of competition for the market should replace the existing model of competition within the market, i.e., where waste providers compete side-by-side with each other."*

This statement has been widely used as the basis for arguing for a change in the market structure in Ireland. A consultation process on the regulation of the sector was undertaken by the DECLG in 2006, in which the Competition Authority reiterated its view, and a number of others, including the development agencies (Forfás, IDA, and Enterprise Ireland) argued likewise. This view has been repeated by Forfás in its annual *Waste Management in Ireland: Benchmarking Analysis and Policy Requirements* reports[17].

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[15] ENFORCEMENT DECISION SERIES (NO. E/05/002) Competition Act, 2002 Decision of The Competition Authority (Case COM/108/02) *Alleged excessive pricing by Greenstar Recycling Holdings Limited in the provision of household waste collection services in northeast Wicklow.* Date of Decision: 30th August 2005.

[16] It can be explained by "contestability" – other suppliers were free to enter the north-east Wicklow market, and this market threat kept Greenstar and its prices efficient. Shortly after the publication of the Competition Authority's report, a second operator did in fact enter the market.

[17] Most recently in its *Update 2010* report. http://www.forfas.ie/media/forfas101005-Waste_Management_Benchmarking_Analysis_2010.pdf

However, it must be noted that the Competition Authority has since then revised its view on market structure substantially. In its response to the 2010 consultation on *the Draft Statement of Waste Policy*[18], the Authority stated:

> *"The waste management industry - specifically the household waste collection industry - has seen the benefits competition can bring in recent years. The introduction of competition to waste collection meant that waste management service providers were encouraged to keep their prices down and improve service quality. CSO household budget survey data for household collection costs suggests that prices have fallen sharply since 2006 for household waste collection. The Competition Authority estimates that Greenstar and Panda offered monthly savings of between 20% and 30% compared to Dun Laoghaire Rathdown County Council before the Council pulled out of the market early this year."*

And

> "*The Authority recommends that competitive tendering is preferable where side-by-side competition does not appear to work well. The Competition Authority is generally in favour of retaining side-by-side competition, but only where it appears to be working well*"

These views have been confirmed in a recent paper by the Authority at the Waste Summit 2011 conference in Dublin[19], where it notes a "*changing environment*" as part of the reason for its changed position, highlighting the facts that we are not starting from a blank canvas, that side-by-side competition is the norm in Ireland, and noting that lower prices and increasing quality of service have been experienced in recent years.

Likewise, Forfás has also changed its stance recently, per its submission to the current consultation process[20]:

> "*In the absence of a track record in Ireland and detailed data (choice in the market, micro data on population densities and consumer preferences, and the extent of economies of scale in waste collection) it is difficult to be too prescriptive. The development agencies support the development of the franchise model in regions where there is insufficient competition. In markets where competition in the market is operational, periodic assessments should be undertaken using clear criteria to ensure that competition is delivering. Where competition is found to be weak, the franchise model should be progressed*."

The next major development was the 2008 High Court Judicial Review of the proposed variation to the *Dublin Region Waste Management Plan*[21], which sought among other things to re-establish public sector control over the MSW stream, and to give the local authorities the option to either collect household waste themselves or put the service out to tender.

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[18] http://www.environ.ie/en/Environment/Waste/PublicConsultations/SubmissionsReceived2010/FileDownLoad,25065,en.pdf

[19] http://www.wastesummit.ie/

[20] *Joint Response by Forfás/IDA Ireland/ Enterprise Ireland to the Department of the Environment's Consultation on Altering the Structure of Household Waste Collection Markets*, September 2011.
http://www.environ.ie/en/Environment/Waste/PublicConsultations/MoreSubmissionsReceived2011/FileDownLoad,28763,en.pdf

[21] This led to two judgements – Panda December 2009 and Greenstar February 2010.

Economic arguments were made in favour of this, based on the assertion that waste collection was a natural monopoly, due, inter alia, to the presence of economies of density, and relying on the earlier OECD and Competition Authority reports. Economic counter-arguments were also made, including a detailed analysis of the Dun Laoghaire market. The latter concluded that, far from being a natural monopoly, the Dun Laoghaire market and by extension the wider Dublin market was capable of accommodating several efficiently operating suppliers, and that economies of density in household waste collection were not large. It also questioned the conclusions drawn from the Finnish and US studies quoted by OECD (2000).

Justice McKechnie, in his judgement delivered in December 2009 in the case taken by Panda, found comprehensively against the local authorities, and made a number of findings which effectively rejected the argument that household waste collection in the Dublin market was a local monopoly:

> "*I would say firstly that I am satisfied that it is incumbent upon the respondents to prove on the balance of probabilities that the Variation, firstly, will improve the provision of the service to the benefit of consumers. Having considered the economic evidence presented before this Court I am not so satisfied. I do not believe that the Dublin market for the collection of household waste is a natural (local) monopoly either taken as a whole, or in each individual local authority area. The evidence from both parties would indicate that the minimum efficient scale is such that, even in the smallest local authority area, there are a sufficient number of customers to support at least three, if not more, operators. I am also satisfied that competition in the market can only provide a reduction in costs to consumers, above and beyond that which is obtainable from either a local authority monopoly or by way of competitive tender. Concerns expressed by the respondents that with competition in the market it is likely that one or more private competitors may become dominant, although true, ignores the fact that with constant competition within the market, such dominance will be tempered by both the actions of other competitors and by competition law. If a dominant player charges excessively, it will undoubtedly be undercut by a competitor; if it abuses its position it is amenable to the Competition Authority and the Courts. On the other hand where there is a public or tendered monopolist, any increase in price will merely be borne by the public, and there will be no constraining force preventing such a situation. Further it will create a situation involving incumbent providers who will be at a significant advantage upon renewable of any contract. There is also the question of what the other competitors are to do in the meantime while they do not have the contract. Many operators who would have been able to operate under the fully competitive system will be forced to exit the market if unsuccessful in their tender. Nor are they likely to invest in the infrastructure needed if they are unlikely to succeed."*

This extract from the judgement encapsulates all the issues that are in question in the debate between tendering for the market and competition in the market. It comprehensively rejects the arguments made in favour of competition for the market. Specifically, after reviewing the evidence presented, the Judge concluded that:

- The variation would not improve the provision of the service to the benefit of consumers.

- The Dublin market for the collection of household waste is not a natural (local) monopoly, either taken as a whole, or in each individual local authority area. On the contrary, each can accommodate several efficiently operating suppliers.
- Competition in the market can only provide a reduction in costs to consumers, above and beyond that which is obtainable from either a local authority monopoly or by way of competitive tender.
- The presence of competitors and of competition law will deal with the possibility of market dominance and its potential abuse.
- In contrast, where there is a public or tendered monopolist, any increase in price will be passed onto the consumer.
- Tendering for the market will also place the incumbent at a significant advantage when the contract comes up for renewal.
- Suppliers who would have been able to operate under the fully competitive system will be forced to exit the market if unsuccessful in a tendering process.
- Suppliers are unlikely to invest in waste management infrastructure if they believe they are unlikely to succeed in a tendering process.

It is worth noting that a number of detailed affidavits by well-established competition economists were made in the course of this judicial review, which incorporated the first attempts that we are aware of to measure economies of density in the Irish household waste management sector, albeit in the Dublin context. The judgement was made by a prominent judge with experience of competition law and of the waste industry[22], who has since been appointed to the Supreme Court.

The next significant development was the *International Review of Waste Management Policy*[23] (authors Eunomia, Tobin et al.) for the Department of the Environment, Heritage and Local Government as it was then. Although work on this report commenced after the start of the judicial review, it was published in September 2009, shortly before the publication of the judicial review judgement.

This was a very wide ranging study, but it dealt also with the structure, costs and pricing of the waste collection market. While highlighting a lack of quality data, it appears to assume that household waste collection is a natural monopoly (likening it to the electric network), and characterised by significant economies of density (Annexes p.1033). It noted that waste collection prices were apparently high in Ireland, specifically in comparison with a low density region in England and in Northern Ireland.

It concludes that this is at least partly due to inefficiencies of competition in the market, and as part of the solution, it recommended that household waste collection was made the legal responsibility of the local authorities, and that "household waste may be collected only by the local authority itself, or by an enterprise acting on its behalf" (Summary Report, p.58). This was seen as enabling the capture of economies of density and the squeezing out of monopoly rents (i.e. excess profits).

[22] He was the judge in the 2009 case taken by the Competition Authority against Mayo County Council and a number of waste management companies in the county.

[23] http://www.environ.ie/en/Publications/Environment/Waste/WasteManagement/FileDownLoad,21596,en.pdf and http://www.environ.ie/en/Publications/Environment/Waste/WasteManagement/FileDownLoad,23848,en.pdf

A number of observations need to be made in regard to the recommendations in the *International Review*:

- As stated, it was published before the judicial review judgement, which came to differing conclusions in relation to the natural monopoly nature of the market.
- The comparison between Irish and UK costs was based on a very narrow set of data (as is acknowledged by the authors of the report). The comparison is also based on the assumption that UK costs are somehow more reflective of the true cost of waste management and disposal than Irish costs – a view that has been challenged in evidence provided to a House of Commons Select Committee investigation into the refuse collection sector. This suggests that it is the UK that is out of line with most of the rest of the EU because of the lack of direct charges for waste collection.[24]
- Data on collection densities provided by one Irish waste collector and used by the authors of the report to indicate very low densities in an Irish context, were later stated by this waste collector to have been misinterpreted, in its submission to the current consultation process[25]. This error has been confirmed by the findings of our case studies (Section 4).
- Other errors were pointed out in this submission, in relation to the cost of provision of a tendered-for green bin service in Dublin City Council.
- Significant differences in cost levels between Ireland and the UK, outside the control of waste operators, were also highlighted, notably on labour costs, waste disposal costs and vehicle costs related to the direct charging of customers for waste collection services.
- Furthermore, the submission points out that in the UK – where tendering or local authority provision is the norm - the market is dominated by two large multinational firms, who between them account for 45% of MSW collected. While this enables the optimisation of economies of scale, it also highlights one of the dangers with competition for the market, pointed to by many commentators. This is the prospect that the system may become dominated by a small number of large firms, to the detriment of smaller operators, and with the possibility of evolving over time into a de facto nationwide monopoly with very high barriers to market entry. This can be seen as a particular risk in a small country.

[24] http://www.publications.parliament.uk/pa/cm200607/cmselect/cmcomloc/536/536i.pdf. Many contributors highlighted the fact that UK waste charges were actually too low and do not reflect the actual cost of waste management and disposal. The UK Environment Agency, for example, questioned whether the lack of a direct charge contributes to a general lack of public awareness about how much households actually pay for waste collection and disposal. It was felt that "this lack of awareness in turn could adversely affect public attitudes to waste management in general". In addition, there also seemed to be some confusion about how much households actually pay. "Indeed, the confusion about how much households really pay is reflected in the figures given there—the National Audit Office, for instance, calculates the average household cost for waste at about £75 a year, while Stephen Didsbury, for the Chartered Institute of Waste Management, put the average household cost of disposal and collection at around £150. "In short, because waste collection is financed through a mixture of unhypothecated government grant and un-ring-fenced council tax, no-one can say precisely how much each individual householder pays for rubbish collection. To that extent, the introduction of a financial link between the bin being taken and the householder's bank balance may be welcome". (page 32). The Head of Essex County Council's Waste and Recycling argued that "we are basically getting waste too cheaply in this country. We do not pay enough for it, we do not realise the environmental costs of it ... .. UK citizens are unusual within the European Union in paying no direct charge to anyone to have their refuse collected and removed from their homes." (page 27).

[25] See Greenstar's Submission in response to the Discussion Document issued by the Department of Environment Community and Local Government in June 2011.
http://www.environ.ie/en/Environment/Waste/PublicConsultations/MoreSubmissionsReceived2011/FileDownLoad,28760,en.pdf

It is also interesting to note that one of the authors of the report, at a recent conference[26], appeared to roll back somewhat from the conclusions of the report with regard to waste collection market structure.

Finally, and more recently, a survey by SLR Consulting which was included in the IWMA's submission as part of the current consultation process[27] indicated that the prices charged for household waste collection services in Ireland have fallen significantly over the period 2004-2011, notwithstanding increasing transport costs, the increasing complexity of the service and very significant investment in waste processing infrastructure over that time[28].

2.4 International Experience

In the context of the above (and the Eunomia report in particular), it is appropriate to review international experience with waste collection services, and more widely in terms of contracting out of public services.

It should be noted that (as the Eunomia report indicates) in most countries the waste collection service went from public monopoly provision to private monopoly provision via competitive tendering. So the structure of the Irish sector currently is an outlier, and the findings of the international literature must be interpreted in this context.

A large body of studies have found that moving from direct public provision to competitive tendering has delivered substantial cost reductions[29]. This includes one 2000 paper in respect of Ireland, although this paper neglects to consider the more common case for Ireland of full privatisation[30].

However, one finding of the literature is that the level of concentration in the household waste collection sector over time is high. As indicated above, the UK sector is highly concentrated, and this is also found elsewhere. In commenting on the Spanish situation, Bel & Costas (2006)[31] find:

> *"Market concentration in the solid waste collection sector is quite intensive. The analysis shows a clear weakness of competition in the sector and gives support to the hypothesis that lack of competition explains the non-existence of privatization-induced cost advantage. Analysis of the time of first privatization suggests that the more recent the reform the better its effect on costs. When privatization began long ago, the costs tend to be higher than for*

[26] Presentation by Sean Finlay, Director, Tobin Consulting Engineers, Waste Summit 2011. http://www.wastesummit.ie/

[27] IWMA Submission in response to the Discussion Document issued by the Department of Environment Community and Local Government in June 2011, p.15. http://www.environ.ie/en/Environment/Waste/PublicConsultations/MoreSubmissionsReceived2011/FileDownLoad,28748,en.pdf.

[28] In the context of the current controversy over the withdrawal of Dublin City Council from the household waste collection business and the sale of their customer list to Greyhound, we note that the City Manager Mr John Tierney recently told a special meeting of the Council that if they had stayed in the market they would have had to double their charges to customers. http://www.dublincity.public-i.tv/core/portal/webcast_interactive/72028

[29] For example Stefan Szymanski (1996), "The Impact of Compulsory Competitive Tendering on Refuse Collection Services", in *Fiscal Studies* (1996) vol. 17, no. 3, pp. 1–19. http://ideas.repec.org/a/ifs/fistud/v17y1996i3p1-19.html

[30] Eoin Reeves & Michael Barrow (2000), "The Impact of Contracting Out on the Costs of Refuse Collection Services: The Case of Ireland", in *Economic & Social Review*, Vol. 31 (2), April 2000. http://www.esr.ie/vol31_2/2Reeves.pdf

[31] Germà Bel & Antón Costas (2006),"Do Public Sector Reforms Get Rusty? Local Privatization in Spain", in *The Journal of Policy Reform* Vol. 9, No. 1, 1–24, March 2006. http://www.tandfonline.com/doi/abs/10.1080/13841280500513084

similar, more recent contracting out." (in this context privatisation relates to competitive tendering).

Dijkgraaf & Gradus (2005) similarly find high levels of concentration in the Dutch waste collection industry, which has weakened some of the benefits of contracting out[32].

It should be a cause for concern in Ireland that, in the cases of these large and/or densely populated countries, there is a tendency for the market to become concentrated and for competitive pressures to be eroded over time, where waste collection services are subjected to competitive tendering.

A similar case worthy of consideration, in a country which like Ireland has a small population and low population density, is that of the contracting out of car driver testing in Finland. Market concentration, the elimination of competition over time and ultimately, rising prices, was the result (see Box 2.1).

[32] Dijkgraaf & Gradus (2005), *Collusion in the Dutch Waste Collection Market.* http://ideas.repec.org/p/wpa/wuwpio/0502006.html

Box 2.1: Risks with Competitive Tendering – a Finnish Example

The following example from Finland of the operation of a competitive tendering process serves to illustrate some of the potential downside risks. Although the example relates to the provision of driver testing services rather than waste collection services, there are, nevertheless, a number of important learning points.

Until the 1990s the driver testing service was provided by the Finnish Department of Transport. The decision to outsource was motivated by efforts to improve efficiencies (and also to reduce public sector headcount). The first out-sourcing contract for driver testing began in January 1999 following a competitive tendering process.

Under Finnish legislation, TRAFI (the Transport Safety Agency) has overall responsibility for driver testing but has the ability to buy these services from private providers. The legislation also sets out a number of conditions for out-sourcing and how this can be done, including the fact that it must be done on a regional basis. While the legislation stipulates that government can choose how many regions, it was decided that 19 regions would be the most appropriate for demographic and geographical reasons. It was also felt that this would help to introduce competition into the market and, in particular, enable smaller companies to compete for regional contracts.

Under the legislation, the length of the out-sourcing contract is also set at 4 years, but with an option to extend for a further 3 years if desired. Since the service was outsourced, however, there have been four "contract periods" – 1999-2002, 2003-2006, 2007-2010 and 2010 to date.

TRAFI personnel report that when the service was initially outsourced there was significant competition for the majority of the regional contracts. In 1999, for example, 30 offers were received from 10 different companies and 7 companies were actually selected to deliver the service. However, in more recent years, the number of potential providers submitting competitive tenders has fallen significantly. According to TRAFI, in recent tendering exercises, only one large firm* has managed to win all 19 contracts and therefore is currently the sole provider of services.

Quality and service levels are stipulated as part of the contract (and are closely monitored by TRAFI). In addition, TRAFI indicates that the system is working well and has delivered real efficiencies (relative to public sector provision). However, the main issue/concern is around the lack of competition for recent tenders and the fact that prices have now started to increase significantly. It would appear that after several years of stability, the "price" which the incumbent is bidding to provide the service has started to rise and this has forced TRAFI to increase test fee rates to cover the cost of the service.

* A-Katsastus, a Finnish-based company providing vehicle inspection and driver testing services in a number of Northern European countries (http://www.a-katsastus.fi/Sivut/default.aspx).

2.5 Context for DECLG Discussion Document June 2011

It is clear from the foregoing discussion that there has been a significant evolution of thought in relation to the relative merits of "competition for" and "competition in" the market.

It is fair to say that the starting point of many commentators (OECD, Competition Authority, Forfás, etc.) was in favour of competition for the market, not least because it is the international norm, and also perhaps influenced by the unplanned way in which the market developed from mostly local authority provision to mostly private sector provision over the last decade and a half.

However, these views have evolved in the meantime, to a position whereby any change in market structure must be on foot of evidence that the market in question is not working for consumers. It is notable that no such information is presented by the Department in its discussion document.

In fact, in so far as analysis has been undertaken of the Irish market, the balance indicates that the current market structure is working well for consumers. Most notably, the McKechnie judgement comprehensively rejects the arguments in favour of a change in structure in the Dublin market, and the recent SLR Consulting survey demonstrates falling prices for consumers over the last decade.

One can point to two studies which indicate that the market is not working well for consumers – the Competition Authority 2005 report and the International Review 2009. However, the Competition Authority view has evolved considerably since then, and a number of errors in the International Review's analysis have been identified.

It would seem, therefore, that, in so far as evidence exists, the conclusion that can be drawn from these reports and other commentaries is that the current market structure is not problematic for consumers.

Nevertheless, as indicated earlier, economic theory (and indeed, competition law) indicates that government intervention may deliver a better outcome for consumers where there is evidence of market failure. While the issue of market failure is not directly addressed in the Department's discussion document, it is clear from the document that there are two main "economic" areas where it believes market outcomes are sub-optimal and could be improved by altering the structure of the market. These are:

- ✓ the lack of choice of services available to consumers, and
- ✓ perceived inefficiencies in the collection system resulting in higher costs to consumers

In describing the market for household waste collection, the discussion document, for example, notes that :

> *"…… In many areas competition is not as vibrant as is preferred, due partially, perhaps, to the economic characteristics of household waste collection as a service. Many householders do not have a choice of service provider as the service provider is a monopolist; in other areas no service provider, public or private sector, offers a service to households. In yet other areas, particularly in some of the larger urban centres, there can be a multiplicity of service providers all working the same collection routes, which has both cost and environmental downsides." (p.5)*

As indicated in Section 2.2, economic theory normally distinguishes between market failure arising from the existence of *too little rivalry* in a market or failure arising from *too much rivalry*. In this instance, however, it would appear that the Department believes that the Irish household waste collection market suffers from both types of market failure i.e. in some local markets there is too little competition and a lack of choice while in others, there is too much competition.

Moreover, in relation to costs, the document states that:

> "*The cost of household waste collection services is also of concern. A number of informed commentators have remarked on perceptions of high prices for household waste collection services, which may be accounted for, in part at least, by the current structure of household waste collection markets. If costs, and therefore, prices are unnecessarily high then we must seek to reduce those costs, if necessary by restructuring markets." (p.1)*

However, it must be noted that no evidence of actual or perceived high prices in the waste collection market is presented. By contrast, the SLR survey quoted above indicates a significant reduction in prices in recent years.

The Department has suggested that introducing competitive tendering would help to address these deficiencies in the marketplace. This in turn, is based on the presumption that:

- ✓ firstly, a single service provider would be able to offer the service more efficiently than multiple providers (i.e. that significant economies of scale exist) and could pass these efficiency gains on to consumers in the form of lower prices, and
- ✓ secondly, that cost savings would also accrue due to the removal of multiple providers on the same collection route (i.e. that significant economies of density exist).

In this context it states:

> *"One reason for structuring household waste collection markets in such a way is because of what is known as the economy of density of household waste collection. In short, the additional cost to a service provider of collecting from a household on a given street, when that company is already collecting waste from other households on that street, is very low. From society's perspective, due to the existence of economies of density, it is wasteful for more than one service provider to provide a service in that area." (p.6)*

We would have to note that this overstates the case considerably. It is a big leap from saying that economies of density exist to saying that this makes the presence of more than one collector wasteful, by which we assume the Department means economically inefficient.

Economies of density are present in many markets, and in most markets that involve a network. A notable example is the airline industry[33]. The presence of economies of density and of scale was used for a long time to justify the lack of competition in the airline industry, but experience has demonstrated that competition has benefited the consumer (and has expanded the industry) enormously.

[33] For estimates of economies of density in European airlines, see http://www.fedea.es/pub/Seminarios/06032006.pdf

The key issue is not the presence of economies of density, but their size, and whether they are large enough (along with economies of scale) to overwhelm the loss of choice and incentive for efficiency and innovation that ongoing competition brings.

The rest of this report seeks to shed further light on the market in Ireland, by presenting new evidence in the following sections. Issues around choice and competition are addressed in Section 3, which sets out the results of the survey of IWMA members and issues concerning operating efficiency. Economies of scale are addressed in Section 4 which sets out the results of a number of case studies of IWMA members.

Section 3: The Irish Household Waste Collection Market – Survey Results

3.1 Introduction

The Irish household waste collection market has changed significantly in recent years both in terms of its scale and structure and therefore any moves to alter the structure of the sector are likely to have a profound effect on service providers and potentially also, on consumers.

The volumes of waste generated in Ireland had been on a strong upward trend as the growth in personal consumption and population increases fed through into rising waste generation per household. Since 2006, however, this trend has been reversed. According to the most recent figures from the EPA[34], in 2009 almost 1.63 million tonnes of household waste was generated in Ireland. This represented a reduction of over 350,000 tonnes, or 18%, on the peak figure of almost 1.98 million tonnes recorded in 2006 and in fact was lower than volumes arising in 2004, despite an increase in the population.

Over the same period, the volume of household waste managed (i.e. processed/disposed of in an identifiable waste management stream) has also fallen, albeit at a slower pace. In 2009, for example, 1.498 million tonnes of household waste was managed - a decline of 15% from the peak recorded in 2006.[35] Kerbside collection, which is the primary focus of the current study, now accounts for over 76% of managed household waste in Ireland and in 2009 amounted to 1.145 million tonnes.

Private sector involvement in the household waste collection market has increased significantly in recent years. From approximately 47% in 2006, private operators collected some 60% of household waste in 2009 according to the most recent statistics from the EPA. And this share has continued to increase in the last two years, as more and more local authorities have withdrawn from the market. By 2011, the IWMA estimated that some 78% of the kerbside collection market was being serviced by private operators. This figure is now believed to be as high as 98%[36], with more than 60 private household waste collection firms currently collecting household waste in Ireland.[37]

[34] It is understood that the 2010 EPA National Waste Report will be published shortly but 2010 data was not available for inclusion in this assessment report.

[35] The figures also show that the proportion of waste generated which is not managed has fallen sharply – in 2004, for example, this was reported to be running at over 13%; it fell to just over 10% in 2006 and in more recent years has fallen to less than 8%. Thus an increasing proportion of waste generated is being properly managed.

[36] According to the IWMA, only Dublin City (c.12%), Fingal (c.5%), Wexford (c.1%), Kerry (c.1%), Galway City (c.1%), Waterford County (c.1%), South Tipperary (c.1%) were still providing services at the beginning of this assessment, and recently Fingal, Dublin City, Wexford, Kerry and South Tipperary have withdrawn from the market, leaving 98% of the household waste collection market in the hands of private companies.

[37] IWMA Submission to the Department, September 2011.

3.2 Survey Results – Key Findings

As part of this study, DKM undertook a survey of IWMA members involved in household waste collection. The purpose of the study was to collect up-to-date information on the nature and scale of their operations and also to ascertain the degree of competition which exists in different parts of the country. A copy of the questionnaire is included at Annex 1 of this report.[38]

The questionnaire was issued to 28 IWMA members involved in household waste collection. Of these, **18 completed questionnaires** were received, giving a response rate of 64%. These responses covered service providers in virtually all parts of the country and of varying size/market share and length of time in the marketplace.

The total volume of waste collected by responding companies amounted to approximately 1.2 million tonnes in 2010 – of which over 640,000 tonnes was household waste. On the basis of the EPA's latest estimate of 1.5 million tonnes of household waste managed, the respondents to this survey account for at least 43% of all volumes managed.

The responding companies also reported that they have a total of almost **630,000 household customers**, or approximately 44% of all the households in the State. This excludes holiday homes, derelict and unoccupied properties, as well as apartments, which for the purposes of the current study are treated as commercial customers.[39]

DKM is confident, therefore, that the survey participants should provide a reasonably representative sample of the sector in Ireland.

The 18 companies that responded to the survey provide services in different parts of the country and are of different sizes and scale. Moreover, some operate in more than one local authority area, while others have a more restricted area of operation. The key findings are summarised below:

a) The sample covered operators providing services on urban, rural and mixed routes. On average, 56% of the routes covered customers in urban locations and 44% rural.
b) While a significant number of companies have been offering services since the 1990s, a number were relatively new to the market or had entered different local markets more recently. The average length of time that respondents had been providing services on a route/ area was found to be 11 years.

[38] While the Department itself had devised a questionnaire to circulate to IWMA members, this was considered to be extremely complex and broad-ranging and gave rise to a number of concerns. It was felt in particular that it was unlikely to elicit robust evidence on the relative merits of change; that because of the complexity of the questions that any results could be mis-interpreted and open to challenge and that, because of this complexity and also because of IWMA members' concerns about confidentiality, that response rates would, be extremely low.

[39] The 2006 Census indicated that there were 1.46 million households in Ireland. The equivalent 2011 Census data is not yet available but based on figures from the An Post GeoDirectory there are currently close to 1.7 million occupied dwellings in the State (excluding holiday homes, vacant and derelict dwellings) and of these, it is estimated that some 14 to 15% are apartments. (The 2006 Census figures recorded a figure of approximately 10% for apartments. However, given the volume of apartments constructed in recent years, the current share is expected to be closer to 15%.)

c) 50% of respondents indicated that they had entered a new market/route in the last 3 to 4 years.
d) Total volume of waste collected by respondents was 1,183,433 tonnes
e) The volume of household waste collected was 642,975 tonnes or 54% of the total
f) The average volume of household waste collected per route/area was 9,456 tonnes. The median (which reflects the middle value reported by respondents for all routes) was found to be 4,350.
g) Total number of household customers of the 18 respondents was 629,700.
h) There was significant variation in terms of the number of customers on a designated route or area. This ranged from less than 100 in markets where the respondent had recently entered to several tens of thousands of customers in large urban areas.
i) The average number of household customers per route/area was found to be 9,260 and the median was 4,644.
j) The vast majority of the routes serviced by respondents were not subject to waiver. Only 6% of all household customers, approximately 40,000 households, were in receipt of a waiver.
k) In total, the companies responding to the survey reported that they operated 387 trucks on their collection routes/areas, with an average of 6 across all the routes/areas reported.
l) In total, the companies participating in the survey reported that there were 1,317 people employed in the provision of household waste collection services. This included 836 directly employed in driving and collecting the waste (an average of 2.2 per truck) and a further 481 providing support services. This included sales and marketing, line management and supervision, back-office and customer support, credit control and finance, as well as bin management etc.
m) On average, companies reported that there were four active competitors offering services on some or all parts of each route/area they served.
n) In addition, respondents were also asked to provide their assessment of their relative share of each of the markets in which they are operating. Again, results varied significantly from area to area – from less than 10% to 90% on some routes, The average, however, across all respondents and all areas was found to be 35% and the mode (the most often given answer) was just 20%.
o) It is also interesting to note that there were no instances where a collection company believed that they were the sole service provider in an area.

In addition to information on the nature and scale of their operations, companies were also asked to indicate the geographical areas in which they offer household waste collection services. The results are summarised in the following table at county level:

- The first column records the number of respondents that indicated that they are offering services in each county/local authority area;
- The second records their estimates of how many operators (including themselves) that they believe are offering services in each of the markets they are active in, and
- The final column indicates DKM's assessment of the coverage of services in each of those markets. This is based on feedback from respondents who were asked to illustrate the geographic scope of their household waste collection services on a map provided by DKM. In areas where there is 100% coverage, DKM has received inputs -

(i) from individual operators who indicate that they are providing services in all parts of the county,

(ii) from several operators, who cumulatively cover all parts of the county, or

(iii) from individual operators who indicate that one or more other operators between them cover the entire county.

Where some areas are shown as having less than 100% coverage, this reflects the fact that based on the survey information provided DKM does not have evidence that all parts of the county are being serviced.

Table 3.1: Geographic Scope of household Waste Collection Services, IWMA Survey

	No. Of respondents offering services by LA area	No. Of reported active competitors by LA area	Estimated Geographical Coverage of each LA area
Carlow	2	4	100%
Cavan	1	4	100%
Clare	2	5	100%
Cork	5	9	100%
Donegal (1)	3	6	80%
Dublin City (2)	1	6	100%
Dublin - DLR	2	2	100%
Dublin - Fingal	2	3	100%
Dublin – South Dublin (3)	2	3	100%
Galway (4)			
Kerry	2	6	100%
Kildare	6	7	100%
Kilkenny	3	6	100%
Laois	3	7	100%
Leitrim	1	3	100%
Limerick	3	7	100%
Longford	1	6	100%
Louth	2	5	100%
Mayo (5)	1	7	
Meath	5	5	100%
Monaghan	2	4	100%
Offaly	3	5	100%
Roscommon	1	5	100%
Sligo	1	4	100%
Tipperary – North (6)	2	5	80%
Tipperary – South (6)	3	8	50%
Waterford (7)	3	5	90%
Westmeath	3	6	100%
Wexford	2	4	100%
Wicklow (8)	2	5	80%

Notes:

1. Respondent to the survey cover approximately 80% of the county. A 2008 survey by RPS Consulting Engineers on behalf of Donegal County Council indicated 85% geographic coverage and 90% population coverage in the county[40].
2. Dublin city market is in the process of opening to competition. Table reflects latest estimate by IWMA of number of active competitors, as of the time of writing.

[40] http://www.donegalcoco.ie/NR/rdonlyres/9215240B-BF7B-402F-8F81-6B251F7EC92A/0/CO100412.pdf

3. Survey identified three operators in South Dublin. Telephone inquiry of South Dublin County Council indicated seven operators in the county.
4. No responses were received for Galway; discussions with IWMA indicate at least two operators in Galway city (including the City Council) and three in the county.
5. Respondents covered approximately 10% of the county on a geographic basis.
6. Respondents to the survey covered respectively 80% and 50% of North and South Tipperary on a geographic basis.
7. Respondents to the survey covered respectively 90% of the county on a geographic basis.
8. Discussions with respondents indicate coverage is available in all parts of the county except in mountainous areas which are inaccessible for trucks.

In a number of cases (notably Wicklow and Donegal), respondents indicated that 100% coverage is not feasible because of accessibility problems (mountainous conditions and poor quality roads). This would have been the case when the service was provided by the local authorities also. Some operators provide collection points in mountainous areas where residents on laneways or boreens inaccessible to collection vehicles can leave bags for collection.

3.3 Survey Results – Choice and Competition

As indicated in Section 2, the Department appears to be concerned that the market for household waste collection in Ireland is not operating as effectively or efficiently as it could do, because of a lack of choice and the absence of competition in some areas.

It is acknowledged that the survey results cannot be taken as providing a fully comprehensive overview of the number of service providers operating in each local authority area, and in some instances, the service provider or the "competitor" may be operating in only parts of the market.

Nevertheless, the survey findings do serve to illustrate the degree of "choice" that is currently available to consumers in the parts of the country covered by the survey. They also underline the extent of the competitive pressures that existing service providers face on parts or all of their collection routes/areas. On average, survey respondents reported that there were 4 active competitors offering services on some or all parts of their route/area – and the most commonly reported market share was just 20%. Moreover, even in areas where operators had managed to secure market shares of up to 90%, they still faced competition on at least part of their market. **The survey did not find a single example where the respondent was the sole or monopoly provider of services.**

On the face of it therefore, the Department's claim that in many areas competition is not "as vibrant as is preferred", and that many households do not have a choice of service providers or the service provider is a monopolist, does not appear to be substantiated by the responses from market participants. Our survey indicates that there are at least 2 to 3 firms offering services in all or part of each local authority area, and in the majority of cases the number is significantly higher.

In this context too, it is worth noting that even in markets that are highly concentrated, economic theory indicates that significant competitive pressures can be exerted by the "threat" of entry from rivals. This will only work, however, if barriers to new entry are low. So even though there may not be a large number of active competitors, these markets are still "contestable" and prices and

output will be very similar to those achieved in a fully competitive scenario. This is corroborated by the findings of the Competition Authority in its 2005 investigation of the north-east Wicklow household waste collection market, referred to already.

3.4 New Entry/Market Exit

Markets that are working well tend to be characterised by low barriers to entry so that new and potentially more competitive firms have an opportunity to enter the market. These new entrants offer a choice to householders and typically will have to offer some advantage to potential customers - in terms of price, quality, range, innovation or reliability of services offered – if they are to secure a share of the market. If the performance of the new entrant turns out to be in some way inferior or less attractive than existing service providers, then the new entrant's business will fail and they will be forced to exit the market.

Our survey and case studies (see later) indicate that barriers to entry in the household waste collection market are low, and that there are no significant financial or regulatory impediments to new companies entering, or existing companies expanding into new markets[41].

Indeed, it is clear from the survey that the market is highly dynamic. Of the 18 companies that responded to the survey, 50% reported that they have expanded their operations into new geographical markets in the last 3 to 4 years[42].

While not directly addressed in the survey, it would appear from discussions with waste collection companies that many operators have faced new entry into their markets in recent years. This includes entry by smaller start-up companies. In many instances, these companies initially offer services in a confined area but gradually expand the scale of their operations as they become more established. It was also noted that in many instances, these companies enter the market on the basis of charging per lift rather than a flat service fee and this in turn has prompted more established service providers to offer similar terms to maintain their customer base.

In addition to information on when they had entered a market, respondents were also asked to provide information on any markets they had exited in the last five years. In total, five examples were obtained. The majority of those responding indicated that they had exited a particular market because they could not obtain sufficient customer numbers to make the service financially viable. While most had provided services for between 3 and 5 years, ultimately they had taken the decision to sell the business to a rival operator. It would appear, therefore, that barriers to exit are also relatively low, which again tends to be a feature of a well-functioning market.

[41] A view concurred with by the OECD in its 2000 report: 'There is little or no sunk investment in the case of waste collection. There are no long-lived assets in waste collection and there is a ready second-hand market for the only assets of any importance (garbage trucks).'; and by the Competition Authority in its 2005 Investigation of the Wicklow market: ''Sunk costs are not a significant barrier to entry. There are very few non-recoverable costs associated with entering new household waste collection markets.' (p.25)

[42] This may in fact underestimate the true extent of market entry as it only captures IWMA members – most of whom are well-established companies - and not new waste management companies who are not yet in membership.

3.5 Unavailability of Collection Services

According to the most recent EPA National Waste Report, just under 8% of household waste was not collected in 2009, while 19% of occupied households do not avail of, or are not offered, a collection service. The apparent gap between the two percentages is partly due to households who bring waste to bring banks and civic amenity centres, share bins and home compost. From discussions with EPA personnel, they are not in a position to differentiate between those who cannot access a service and those who choose not to avail of a service.

The EPA's estimates seem somewhat at odds with the evidence from the survey results and also from discussions with service providers which indicate that there are few parts of the country which do not have access to waste collection services.

The following table reproduces the results from the survey of IWMA members but adds the EPA estimates of unserviced occupied households by local authority area, where un-serviced indicates either no service available or not availing of an available service.

Table 3.2: Geographic Scope of Household Waste Collection Services, IWMA Survey, Versus EPA 2009 Estimate of Unserviced Households

	No. Of respondents offering services by LA area	No. Of reported active competitors by LA area	Estimated Geographical Coverage of each LA area	Unserviced Occupied Households % (EPA-2009)	Disposable Income per Person 2009 €
Carlow	2	4	100%	32%	19,906
Cavan	1	4	100%	55%	19,246
Clare	2	5	100%	41%	19,883
Cork	5	9	100%	24%	21,144
Donegal	3	6	80%	45%	17,708
Dublin City(2)	1	6	100%	5% }	24,316
Dublin - DLR	2	2	100%	0% }	
Dublin - Fingal	2	3	100%	0% }	
Dublin – South Dublin	2	3	100%	0% }	
Galway City				0% }	
Galway County				34% }	21,071
Kerry	2	6	100%	45%	18,694
Kildare	6	7	100%	6%	21,877
Kilkenny	3	6	100%	45%	19,507
Laois	3	7	100%	34%	19,479
Leitrim	1	3	100%	27%	19,814
Limerick City	3	7	100%	5% }	
Limerick County				45% }	21,230
Longford	1	6	100%	13%	19,375
Louth	2	5	100%	16%	20,917
Mayo	1	7		35%	19,562
Meath	5	5	100%	15%	20,963
Monaghan	2	4	100%	33%	18,011
Offaly	3	5	100%	48%	18,621
Roscommon	1	5	100%	54%	19,435
Sligo	1	4	100%	18%	20,677

Tipperary – North	2	5	80%	25%	20,665
Tipperary – South	3	8	50%	26%	20,075
Waterford City	3	5	90%	10% }	
Waterford County				21% }	20,134
Westmeath	3	6	100%	27%	19,865
Wexford	2	4	100%	16%	19,622
Wicklow	2	5	80%	10%	20,615

Source: EPA National Waste Report 2009. CSO: County Incomes and Regional GDP, 2009. 26 January 2012.

There is clearly a divergence in some areas between the survey findings on service coverage and the EPA's estimates of the proportion of occupied houses which are unserviced. In Cavan, for example, the results of the survey of waste collection companies would suggest that they are covering all areas of the county.

In contrast, the EPA estimates suggest that over a half of households are not using, or do not have access to, a collection service. Similarly, in Kilkenny, our survey indicates that there are 6 operators providing services in different parts of the county and providing 100% coverage. The EPA estimates, however, put the proportion of occupied households who do not have access to/avail of a collection service in Kilkenny as high as 45%.

The survey evidence and feedback from market participants would suggest, therefore, that, in the vast majority of situations, the existence of unserviced households reflects the personal choice of the householder and not a lack of access to a collection service. It was noted by some waste collection firms, for example, that they are routinely passing houses where they know the householder is not using a waste collection service. This may be due to the fact that some householders opt to dispose of their household waste at amenity sites and recycling centres rather than through a kerb-side collection or are using other, less environmentally friendly, means of disposal.

In general, however, it was believed by those consulted as part of this study that it is only in the very remotest areas of the country, where access is difficult or impossible for refuse collection vehicles, that services are not being provided. Even in those circumstances, waste companies indicated that they offer householders the option of bringing their bins to dedicated collection points. It was noted that this was the case also when the local authorities provided waste collection services, and would remain the case even if the market was restructured as is being proposed. While it was not possible to quantify the potential number of households affected, the consensus was that it is very small.

DKM also considered whether affordability might be a factor in explaining the variation in collection uptake rates reported by the EPA. Table 3.2, therefore, also shows per capita disposable income by county. It is clear from these figures that there is no significant relationship or correlation between uptake and income. For example, in Longford and Roscommon, which are broadly similar geographical areas and, according to the CSO also have broadly similar per capita income levels, the proportion of households which the EPA figures indicate do not have access to/do not avail of a service is 13% in the case of Longford but 54% in the case of Roscommon. (In both instances, however, feedback from market participants indicates that there is full service

coverage throughout both counties.) One cannot simply conclude, therefore, that relative income levels or ability to pay has a significant influence on the level of uptake of household waste collection services in different parts of the country.

In view of these findings, it would not seem appropriate, therefore, to attempt to use supply-side measures such as altering the structure of the market for household waste collection to try to address issues of consumer behaviour. It may be more appropriate to use other policy instruments, such as a requirement for households to use a recognised waste disposal mechanism, if the Government is concerned about the low level of uptake of waste collection services in some counties in Ireland.

3.6 Service Choice and Quality

"Consumers in Ireland have seen the benefits competition can bring to waste collection in so far they now face reduced prices and improved service delivery".

The Competition Authority

As part of the survey of IWMA members, companies were also asked to indicate the type of service offered in each of their markets/areas.

The results showed that:

- all respondents are offering both black and green bin collections on all routes.
- In addition, almost a quarter of respondents indicated that they collect glass as part of the green bin collection service on some of their routes (and some also collected clothes).
- Two thirds of respondents reported that they offer a brown bin collection service on some or all of their routes and a number of others are in the process of piloting brown bin collection services for some customers[43].

These results compare with figures produced by the EPA for 2009 which showed that 96% of serviced households had at least a 2 bin collection service and 24% of households had access to a 3 bin service.

Increasingly too, consumers are being offered a choice in relation to payment methods:

- Most companies operate an annual flat rate collection or standing charge (as, in general, this makes commercial planning and budgeting easier);
- however, an increasing number also offer a reduced fixed charge combined with either a pay by weight or pay by lift option; and
- some are now exclusively offering pay by weight/lift services.

From discussions with market participants, it appears that these options are being introduced in response to competitive pressures from rivals or in some instances, from consumer requests.

[43] It was noted by some respondents that they have faced resistance from customers to the introduction of a brown bin.

3.7 Conclusions

The survey and discussions with market participants indicate that:

a) The market for household waste collection is extremely competitive and rivalry between operators is intense.
b) On average, respondents face competition from at least 4 other suppliers on at least some parts of their route/area.
c) The average market share which was reported across all respondents and all areas was 35%.
d) Even in areas where a single company has secured a significant market share, they still faced competition. There were no reported instances where a collection company believes that they are the sole service provider in an area.
e) Barriers to entry and expansion are low and market entry and expansion is a routine occurrence.
f) Some 50% of respondents, many of whom have been in existence for a decade or more, indicated that they had entered a new market/route in the last 3 to 4 years.
g) The typical scale of waste collection operation is relatively modest – even for companies that have been in operation for many years. The average number of trucks per area serviced was found to be six. As the average number of years providing services was found to be 11, this would seem to suggest that the minimum efficient scale for successful and profitable market entry and participation is low (a point that will be addressed separately in the following section).
h) In a similar vein, the average number of household customers per route/area was found to be 9,260. Again, as the majority of operators have been operating successfully for many years, this would again seem to suggest that the minimum efficient scale required for a company to break even in the household waste collection market is relatively low.
i) An assessment of the geographical location of the survey respondents would also suggest that there are few areas of the country that do not have access to at least one service provider, and in most instances there are significantly more providers offering services.

As a final point, it is noteworthy that the respondent firms have been in their respective markets for an average of 11 years, are sharing these markets with on average 4 other suppliers, and have an average market share of 35%. These are not the characteristics of a natural monopoly. If these markets were natural monopolies, they should all be being served by monopolists at this stage.

Section 4: The Irish Household Waste Collection Market – A Natural Monopoly?

4.1 Minimum Efficient Scale/Natural Monopoly

The Department's discussion document expresses a concern that the market for household waste collection in Ireland is not operating as efficiently as it could because in some markets there are too many suppliers which is leading to high service costs and ultimately higher prices to consumers.

While not overtly stated in the discussion document, the idea that a single waste collection firm could provide services in a given local authority area more efficiently and at a lower cost than competing firms is akin to stating that each local authority area/market effectively constitutes a "natural monopoly"[44].

A natural monopoly situation is said to occur when it is efficient for only one firm to produce all of the output i.e. a single firm can service the market at a lower cost than could be achieved by two or more competing firms. This in turn means that the Minimum Efficient Scale (MES) in the market must be at least 50% of total market demand. MES refers to the minimum level of output that a firm must produce to enable it to operate so as to minimise its average costs of producing each unit of output. This is obviously closely related to the concept of economies of scale – whereby the average cost of production declines as the volume of output increases. Economies of scale are a common feature of many markets, but they must be significant, and of a sufficient strength to overwhelm the benefits of competition, for a market to be considered a natural monopoly.

Traditionally, natural monopolies tend to be a feature of industries where fixed costs constitute a very significant element of the total cost of production.[45] In these sectors, output needs to be very high to enable the firm to cover its costs. As a result, in these situations, there may actually only be room in the market for one firm to operate efficiently and to cover its costs.

In this natural monopoly situation then, only a single firm in a market would be profitable - if there were two or more identical efficient firms producing goods, they would all be operating at a loss as they would not be able to produce sufficient output to cover their costs of production.[46]

In determining whether there is a case for Government intervention in a market on the basis that it is in fact a "natural monopoly", the critical issues therefore relate to the MES of operation in a

[44] This is also consistent with the case argued by the Dublin local authorities in Panda v Dublin City Council – an argument rejected by the High Court.

[45] Typically, natural monopolies tend to arise where firms incur very significant capital costs which would be virtually impossible or extremely expensive for more than one firm to replicate – examples include rail infrastructure, gas pipelines, electricity transmission grids, etc. where it is more efficient to just have one monopoly operator of the infrastructure. Nevertheless, whilst recognising the fact that it would be inefficient to try to duplicate the cost of providing this infrastructure, the trend in recent years has been to try to introduce competition by providing rival firms with access to the infrastructure.

[46] See for example, Tirole J. (1988), *The Theory of Industrial Organisation*, MIT Press, page 20.

given market relative to the actual size of that market.[47] The test therefore is how many firms can operate profitably in a market, or more precisely, how many can at least break even.

It should be stressed that in economic theory a "natural monopoly" is viewed as something of an exception[48]. Economic theory, for example, indicates that prices will be higher and output lower in a monopoly situation versus competitive market situation. However, in the case of a natural monopoly, the existence of a monopoly provider is viewed almost as the "least worst" outcome as the "benefits" in terms of improved efficiency are considered to outweigh the "costs" in terms of higher prices, lower output etc. And therefore unless there is a very strong case for the existence of a natural monopoly, then a competitive market situation will deliver a better outcome for consumers.

Moreover, it is important to note that even in a market which is deemed to constitute a natural monopoly there is no guarantee that the price charged to consumers will be lower than with competition – as the potential benefits arising from productive efficiency (which leads to lower costs) may be offset by the loss of allocative efficiency (which leads to lower prices). That is, the monopolist may simply take advantage of its lower costs to increase its profit margin rather than pass on any production efficiencies to the consumer in the form of lower prices.

So, unless, there was some sort of regulatory control over the "natural" monopolist, it could still lead to higher prices than a competitive situation, even where there are lower costs. For this reason it is necessary that a monopolist's conduct and performance is closely regulated and monitored, to ensure that any efficiency gains are actually being passed on to consumers in the form of lower prices, even where that monopolist gained the market through a competitive tendering process.

4.2 Economies of Density

As indicated above, it would appear that the Department believes that economies of scale are so significant that a "monopoly" provider of waste collection services in a given area (albeit one appointed by way of competitive tendering) would deliver a more efficient, lower cost outcome for consumers. Moreover, the Department has also clearly indicated that it believes savings would arise because of the existence of significant economies of density within the market.

Economies of density exist if the firms average costs of production decline as the number of households increase. So in the case of household waste collection, economies of density would be associated with the frequency of customers along a given route. The more densely located the households that a company collects from on a given route, the quicker they can exhaust the capacity of the truck. Moreover, under the "monopoly" provider model recommended by the Department, only one truck would be collecting on each route, so avoiding any duplication of costs.

[47] The capacity of the natural monopolist is also important – as clearly, if they are capacity constrained they will not be able to meet the demand in the marketplace.

[48] 'The claim of "natural monopoly," while easy to make, is not nearly as easy to prove as its proponents would like.' *OECD Policy Roundtables (1996) Abuse of Dominance and Monopolisation*. http://www.oecd.org/dataoecd/0/61/2379408.pdf

While density will have an impact on the operating costs of waste collection firms, it is the significance of these costs that is important, and whether the extent of the potential savings would offset the welfare loss from the creation of a natural monopoly provider (albeit a regulated one). The actual experience with economies of density in our case studies is discussed in the next sub-section.

4.3 Case Study Findings

As part of this study we examined in detail the operations and management accounts of four suppliers who were seen as representative of different segments of the market, i.e.:

- ✓ Large urban;
- ✓ Medium-size urban with a rural element;
- ✓ Smaller urban with a rural element;
- ✓ Predominantly rural with small urban elements.

The purpose was to assess how firms behave in varying market sizes and structures, and how these impact on costs and Minimum Efficient Scale (MES).

The market shares of the examples considered vary considerably, from 30% to above 80%. However, each operator has at least one competitor.

Cost Drivers

A large number of factors drive costs in the waste collection business, some within the control of suppliers and others external to their control. Some of the important factors arising from our analysis are discussed below:

- A key factor is the degree to which **households avail of a kerbside service**. Table 13 of the EPA's *National Waste Report 2009*[49] indicates that a significant proportion of households do not avail of a service, and that there is a clear correlation between urbanisation and the proportion of households availing of a service. This has an impact on costs of providing services[50]. Our case studies confirm that the vast majority of urban households tend to avail of a service, while the rate in rural areas is lower. This was discussed in more detail in Section 3.

- There is a range of **charging systems** in place, notably –

  - ✓ Fixed annual charge, paid in a single amount up-front or in monthly instalments, with perhaps an option as to bin size (120 or 240 litre);

[49] http://www.epa.ie/downloads/pubs/waste/stats/EPA_NWR_09_web.pdf

[50] It should be noted, however, that not using a kerbside service does not necessarily imply illegal or irregular disposal of waste by households. Our case studies indicate that significant numbers of people, particularly in rural and semi-rural areas, bring bags of waste directly to transfer stations/MRFs. Likewise there is an increasing incidence of PTU (Pay To Use) waste deposit units (e.g. see http://www.bigbin.ie/index.html) at garage forecourts and similar locations. These are effectively automated bring stations for black bin waste. It is unfortunately not straightforward to relate these volumes in a systematic way back to household numbers, and a full picture of the situation awaits a proper national household survey.

- ✓ Pure pay per lift, usually via tag-a-bin/tag-a-bag, differentiating between black, green and brown bins (in some cases the green or brown bin may be free);
- ✓ Pure pay per weight, with similar options as pay per lift;
- ✓ A combination of a smaller fixed charge with a smaller per lift and/or a per weight charge.

They each impose differing administration costs and benefits on the operator, and may involve differing capital costs (e.g. barcode readers on trucks, connected to the accounts system), and they of course impose differing "inconvenience" costs on consumers[51]. A combination of fixed charge, pay per lift and pay per weight can be considered the most economically efficient as it matches most closely the behaviour of costs; however they are sometimes seen as being overly-complex for consumers.

Charging systems also have a more direct impact on operating costs, in terms of their effect on presentation rates:

- ✓ Where the charging system has no "per use" element, there is little incentive to avoid putting the bin out for each collection (and little incentive to minimise waste, unless there is a lower charge for a smaller bin).
- ✓ Pay per weight likewise contains no incentive to minimise presentation rates but does incentivise waste minimisation.
- ✓ Pay per lift incentivises consumers to minimise presentation rates and waste volumes, but the latter is dulled somewhat as there is some scope to "stuff" the bin as full as possible.

High presentation rates can generate higher costs for the supplier, due to the higher number of lifts, which slows down the completion of the route. Suppliers confirmed that, for customers not paying a per lift charge, presentation rates were higher.

- The **mix of commercial waste collection** within the household waste collection service varies by reference to the level of urbanisation. In urban areas it tends to be less than 10%, whereas in smaller urban/rural routes it can be much higher, reflecting the economics of MSW collection as well as the nature and scale of businesses on these routes. Waste collected per commercial customer is also a multiple of the volume collected per household customer, even when collected on a mixed route[52], which complicates the economics of household collection services. These characteristics have implications for the capacity to split out services between household and commercial, should competitive tendering be adopted, particularly outside the larger urban areas.

[51] Charging systems can also be used as a marketing tool: new market entrants tend to adopt pay-per-lift systems, as they appeal to consumers who dislike up-front fixed costs (as well as being simpler for the supplier). Incumbents are often forced to introduce (or reintroduce) pay-per-lift systems to protect market share in these circumstances.

[52] There are some limitations on the scope for primarily household collections to take certain types of commercial waste, in that some businesses will require a weekly service, while household collection services are generally fortnightly

Structure of Costs

- The basic operations and cost unit is the **truck**. The minimum feasible fleet to service a particular market is one (split) truck in rural/small urban areas, while in larger urban areas it tends to be two (dedicated black and green) trucks[53]. This is reflective of density and its impact on operations ("in rural areas we run out of time before the truck is filled; in urban areas, the truck is filled before we run out of time")[54]. Capacity per truck is approximately 13 tonnes of black bin waste and approximately 6 tonnes of green bin waste.

  The working hours of the truck can vary, from a single shift five-day, 40 hour week to double shifts/6 day patterns. Shift lengths tend to be more variable in rural areas, reflecting the variability in daily runs.

  The case studies indicate that the average customer numbers served per truck on a single shift basis range from over 4,000 per truck in a large urban area to less than 2,000 per truck in predominantly rural areas (some of whom would be commercial).

  Crews usually consist of one driver and two helpers in urban areas because of higher densities, and one driver and one helper in more rural areas.

  Once added to the fleet, a truck's costs per shift are largely fixed. Trucks are usually acquired on long term leases which include maintenance costs. All-in costs per truck using a single shift pattern are in the region of €150,000-170,000 per annum for rural markets and €170,000 – 190,000 per annum for urban markets (because of the extra helper on the latter). Operators indicate that moving to a double shift pattern mean that most operating costs – long term lease (which is related to usage rate), payroll, fuel, etc. - are effectively doubled.

  The key way to drive efficiency is to increase density (increased customers per route). However, the scope for increased efficiency is limited, because of the capacity of the truck, and the impact of higher density on the time required to complete a route:

  - ✓ In rural areas, the route tends to be finished before the truck is full, so some more waste can be taken in, but the low population densities on the route itself limits the scope for increased customers per route.

  - ✓ On urban routes, the truck generally has to be emptied at least once in the course of the shift, and the scope for making an additional run to the transfer station and getting back onto the route to collect more waste is limited. Significant economies are only available when increasing from a very low market share (where the operator cannot fill the truck in a day). Thereafter, economies are only available on the marginal truck, and are thus limited.

[53] It is possible also to use a single truck to collect black bin waste and green bin waste on alternate weeks.
[54] Three-way split trucks are available, but some operators reported practical difficulties using these on Irish roads.

- The other major cost centre is **processing/disposal**. Green and brown bin waste undergoes sorting and processing before being sold or disposed of; in some cases black bin waste is also processed to generate Refuse Derived Fuel (RDF). Sorted/processed green bin waste can generate income depending on market conditions, however, in the case studies we looked at green bin waste was seen as having little or no net cost, i.e. revenue in broad terms covered processing costs. Our case studies reported that processing of brown bin waste at the moment generally represents a cost to the business. Disposal costs range from €80-110 per tonne for black bin waste, in the case studies we examined, reflecting differing transport and landfill/processing costs. They tend to be higher in more rural areas than in urban areas, because of distance and available processing options.

- As the number of operational landfills in the country has reduced, and the level of waste sorting/diversion has increased, **transfer stations/Materials Recovery Facilities (MRFs)** are becoming more important. Firms can provide their own facilities, or use third party facilities (often competitors'), depending on the logistics of collection routes. Where these facilities are supplier-owned their costs are largely fixed, whereas where third party facilities are used, the costs for collection firms vary with the level of usage.

These facilities tend to be more sophisticated in large urban areas than in smaller urban and rural areas, incorporating for instance greater levels of separation and processing, generation of RDF, etc. Local landfill prices as well as volumes are key drivers of the commerciality of processing. Smaller facilities are regulated by the local authorities while larger facilities are regulated by the EPA, which tends to impose higher costs. Planning and timeframe for new facilities can be significant cost issues.

Annualised costs of these facilities (including lease/depreciation and staffing) can vary from several hundred thousand to several million Euro per annum, depending on size, age and level of sophistication. They will typically process both household and commercial waste.

- **Bins** cost €20-25 each, and are expected to last at least ten years. Thus the cost tends only to arise for new customers (delivery and return costs are also incurred).

- Specific **marketing** costs also tend to be aimed only at new customers, and marketing effort is often in the form of introductory offers, which tend to last for one year and are influenced by short run marginal costs. The one-off cost of gaining a new customer (including marketing and delivering new bins, etc.) can be up to €100 in urban areas. In rural areas marketing is more informal - often not extending to much more than a website and a telephone number on the bin sticker and on the truck.

- It is not straightforward to differentiate between **direct overheads and central/head office costs,** because of different allocation of cost lines. In aggregate they can vary from several € hundred thousand to several € million, depending on the scale of operation. However, they average approximately €40-50 per customer, and this did not vary greatly per size of operation, albeit it must be remembered that each of our case studies represented mature and reasonably stable markets. A start-up supplier might face higher overheads per customer, but on the other

hand could minimise overheads by running a less sophisticated operation. Bins and marketing costs are generally considered as overheads.

Minimum Efficient Scale (MES)

The next step is to estimate MES for the market types, based on the information available from the case studies, guided as well by the results of the survey. A priori, one might expect there to be a difference between MES in the large urban market and in the other markets, due to size and densities.

The first thing to be said is that all the cases we considered, which varied from 3,500 customers up to over 40,000 customers, were profitable. None was exceptionally profitable and all faced competition - only one case had more than 50% market share[55].

This is perhaps surprising: one might expect that if a service is viable at 3,500 customers, then it should be highly profitable at the higher level, as long as even modest economies of scale apply. It is reflective of a number of factors, however:

1. The key operational and cost unit is the truck, and costs jump in a "lumpy" manner with the number of trucks in operation. Therefore the costs do not fall as rapidly as one might expect, as the customer base rises, and there are limitations on the scope to service more customers with the same truck (apart from doubling the shift pattern which in any event effectively doubles costs).
2. Particularly in less urban areas, household and commercial collection routes tend to be mixed, which underpins the commercial viability of both.
3. In the larger market, prices charged to customers are lower. Annual average revenue per customer in the large urban market is less than €200, while in the other markets it is closer to €300[56]. This indicates that efficiencies of larger scale are being passed onto customers, which is what one would expect in a competitive market with low barriers to entry.

The focus of our analysis is not on profitability as such, but on costs, and where MES is. However, profitability in a competitive market is a good indicator of MES. One way of looking at the issue is that, in a competitive market, MES is at the break-even point. If suppliers can break even in a competitive market, then on the face of it they are operating at the efficient scale.

It is possible to serve a market with one truck, but we will consider a minimum business size of two trucks[57]. Our assumptions can be summarised as follows, for representative urban and rural services, on the basis of efficient usage of trucks in a competitive market:

[55] Market share in smaller segments of each market (e.g. daily routes) were variable – operators could have a high market share in particular town or part of a town, and very low market share in other segments/daily routes.
[56] Revenue per marginal customer can be considerably less, as price is a key marketing tool to gain new customers.
[57] Interviewees indicated that they do have competitors running single trucks, but they are small-scale and do not serve the whole market, concentrating instead on specific urban areas.

Table 4.2: Cost Data for Household Waste Collection Services – Urban & Rural

	Urban	Rural
# trucks	2	2
cost per truck, € per annum (1)	180,000	160,000
customers per truck	4,000	1,700
total tonnage collected	8,000	4,080
Total customers	8,000	3,400
revenue per customer €	180	250
Revenue Sales of materials/tonne collected, €	0	0
waste per household per annum, tonnes	1.0	1.2
%age for disposal, by weight	60%	70%
Disposal cost per tonne, €	90	110
Overheads per customer, €	50	50

Notes:

1. The difference between urban and rural costs relates to the need for an extra helper on the urban routes.
2. The above numbers are effectively for exclusively household collection services. Some adjustments have been made to the rural numbers to account for the high mix of commercial customers.

The resultant pro forma profit & loss account is as follows:

Table 4.3: Pro Forma Profit & Loss of Efficient Urban & Rural Collection Services, with two trucks

	Large Urban		Small Urban/Rural	
Customer numbers		8,000		3,400
	per customer €	**Total (€'000)**	**per customer €**	**Total (€'000)**
Revenue	180	1,440,000	250	850,000
Direct collection cost (truck & crew)	45	360,000	94	320,000
Disposal	54	432,000	92	314,160
Margin	81	648,000	63	215,840
Overheads	50	400,000	50	170,000
Profit before tax	**31**	**248,000**	**13**	**45,840**
Total costs	*149*	*1,192,000*	*237*	*804,160*

Our calculations, based on information from our case studies and efficient operation of a two-truck service in competitive large urban and rural markets, serving respectively 8,000 and 3,400 customers, is that both can make a profit, indicating that they are operating at or close to MES. It is worth noting that the average number of customers served in the markets covered by our survey (Section 3) is just over 9,000.

Per unit costs would fall somewhat if customer numbers increased by an amount that an extra truck operating efficiently could serve, but not greatly, as most costs tend to jump in line with either the number of trucks or the number of customers. Few costs are invariant to one or the other. Where customer number grow by an amount less than the amount an extra truck can

efficiently serve, collection costs per customer are unlikely to fall. This reflects the "lumpiness" of costs in the industry.

The implications of these results are that every local authority area in Ireland is capable of accommodating a number of efficient competitors. If one were to conservatively assume, for example, that the minimum efficient scale of operation for household waste collection lies in the range of 4,000 customers in more rural counties to 8,000 customers in more urban counties, then as demonstrated in the table overleaf, in all local authority areas, there is room for a number of household waste collection firm to operate efficiently.

Moreover, this does not take account of the fact that in many – particularly rural – areas, waste collection firms also collect commercial waste on household collection routes and this would reduce the actual number of household customers they need to enable them to break-even.

Economies of Density

A key issue in the debate over the structure of the household waste collection market (as highlighted in the Department's discussion document) is the question of economies of density. It is therefore appropriate to examine this issue in the context of our case studies.

Density refers to the number of customers a supplier has on a particular route. Economies of density are essentially concerned with filling the truck quicker and hence being able to collect more waste in a given shift. The latter part is essential: if it is not possible to collect more waste on a given shift, new shifts or trucks must be added and most of the economies are lost.

Density and the scope for economies of density are affected by a large number of factors, including:

- Total number of households on the route, and distances between them, which can vary greatly depending on whether it is an urban or rural route.
- Truck capacity.
- Frequency of collections.
- Presentation rates, which are affected by charging systems.
- Distances to and from the depot, and to and from the waste drop-off points.
- Truck speed to and from the route, and along the route.
- Lift speed, which is affected by truck, bin and crew configuration (more helpers on the truck can increase speed, bagged waste is quicker than binned waste etc.).

Table 4.4: Estimate of Efficient Number of household Waste Collection Services that Each City/County Can Support

	Number of Households (2006)	Efficient Number of Household Waste Collection Firms
Carlow	17,195	4
Cavan	21,929	5
Clare	38,210	10
Cork City	43,939	5
Cork County	123,295	31
Donegal	50,415	13
Dublin City	190,984	24
Dublin - DLR	68,412	9
Dublin - Fingal	80,402	10
Dublin – South Dublin	80,631	10
Galway - City	25,353	3
Galway - County	53,308	13
Kerry	48,110	12
Kildare	60,957	8
Kilkenny	29,651	7
Laois	22,591	6
Leitrim	10,646	3
Limerick - City	19,550	2
Limerick - County	44,675	11
Longford	12,111	3
Louth	38,703	5
Mayo	43,431	11
Meath	53,938	7
Monaghan	18,655	5
Offaly	23,769	6
Roscommon	20,734	5
Sligo	21,480	5
Tipperary - North	22,992	6
Tipperary - South	29,375	7
Waterford - City	17,069	2
Waterford - County	21,511	5
Westmeath	27,064	7
Wexford	45,566	11
Wicklow	42,870	11

Note: Cork, Limerick, Galway and Waterford cities refer to the population within the city boundaries. Operationally these urban areas contain substantial populations outside the local authority boundaries, and hence the above represent under-estimates of the number of efficient waste collection firms that could operate in these urban areas.
Source: Central Statistics Office, DKM Estimates

Our case study data indicate that:

a) A truck can serve from two to three times as many customers per day in an urban area than in a rural area.
b) Average waste collected per household kerbside customer per annum per the EPA's 2009 report is just over 1,000kg per household. The average weight collected per our cases studies is somewhat lower than this in large urban areas and somewhat higher in less urban areas.
c) Each lift takes approximately 30 seconds in rural areas but less in urban areas, because of the additional helper.

d) The balance of the time on the route is spent travelling:
    - from the depot to the start of the route,
    - along the route,
    - to the transfer station or other facility to empty the truck at the end of the route, and possibly also mid-route depending on volumes picked up[58],
    - then back to the depot.
e) The higher the densities, the slower the speed of the truck along the route. Distance travelled can be up to three times as long on rural routes as on urban routes.
f) In urban areas, collection tends to be by dedicated black or green bin trucks, each collecting on alternate weeks; in rural areas, trucks can be split (i.e. collecting both black and green bin waste), but collecting only every second week, or the same truck can collect black and green bin waste on alternative weeks.
g) Average presentation rates vary greatly depending on the charging system: with a fixed-only charge, or pay-per-weight, it tends to be high (80% or more), but weight per lift is commensurately lower. Where there is a per lift element to the charge, presentation rates are significantly lower but weight per lift is higher to compensate. Overall average weight per lift is approximately 35kg of black bin waste and approximately half that for green bin waste.
h) Black bin waste represents about 2/3^{rds} of total weight collected per household, and is roughly twice the density per kg of green bin waste. Therefore, the characteristics of a black bin collection are roughly similar to a green bin collection on the same route, except that the weight collected is approximately double (volume would be similar).

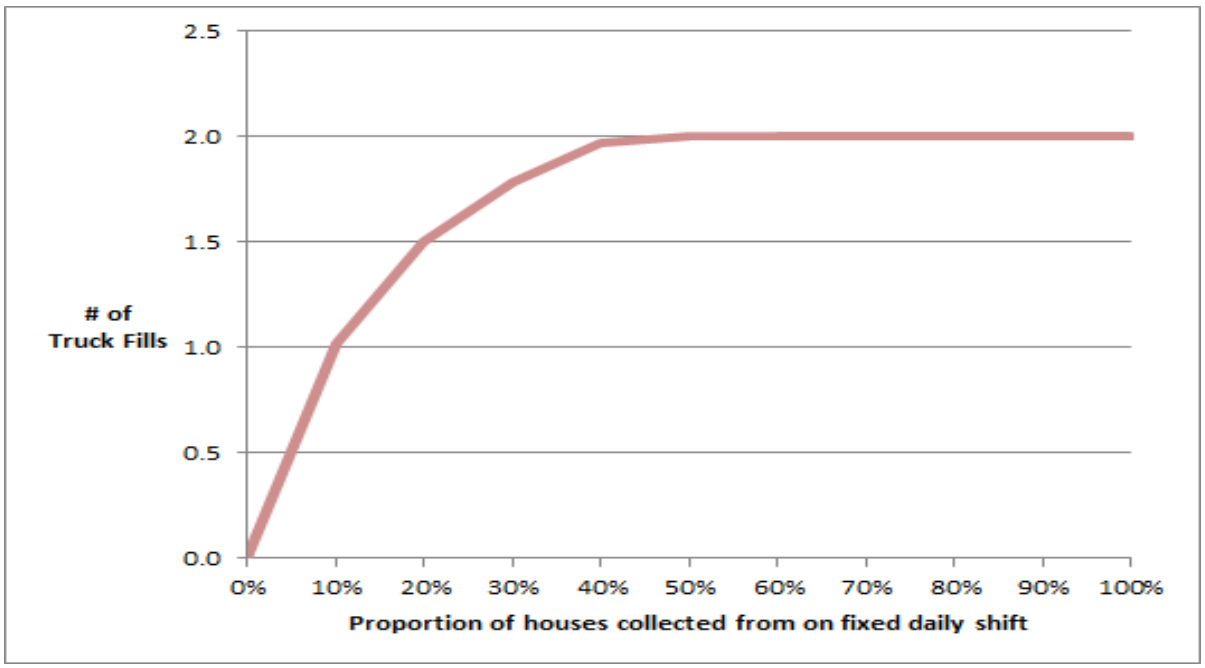
The key question is: How quickly can an operator fill the truck, and what scope does this give to return to the route and collect more waste during the same shift, as the proportion of households collected from, or density of customers, along the route changes?

In order to test this, we have developed a model of waste collection in an urban and rural environment. This is based on data from the case studies and attempts to capture the impact of collecting from a greater proportion of houses, holding the shift time fixed at 8 hours.

The two charts overleaf summarise our findings, for the urban and rural environment:

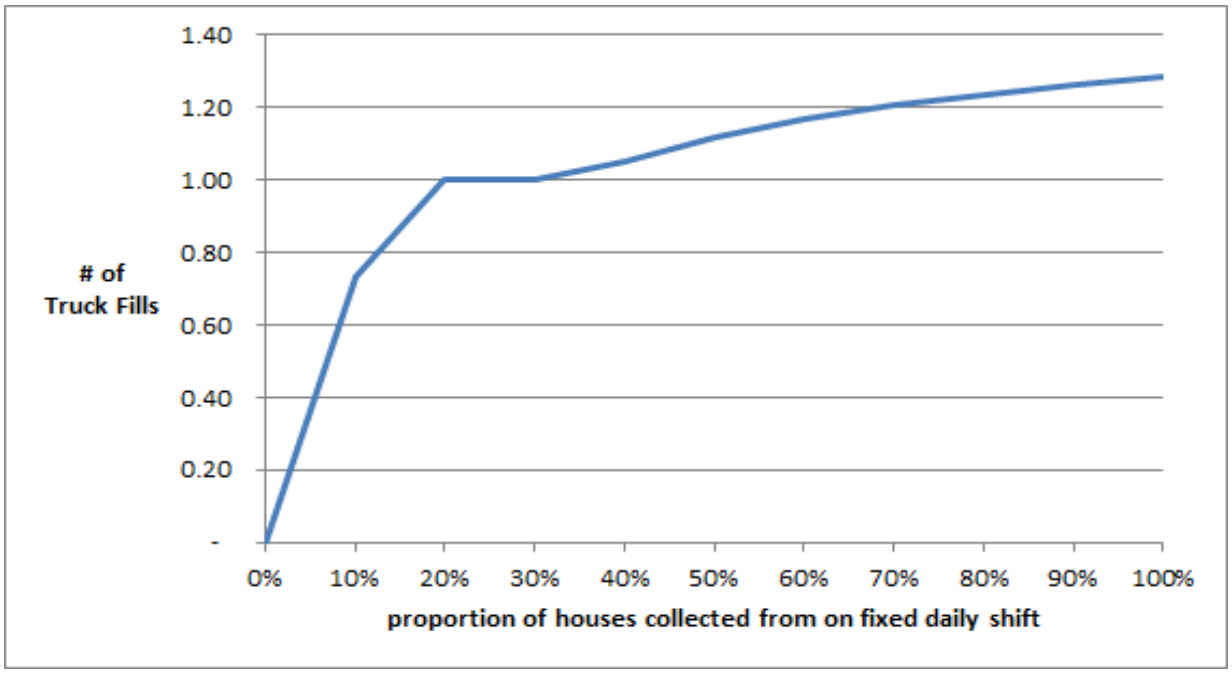
[58] This is more usual in urban areas ("in rural areas we run out of time before the truck is filled; in urban areas, the truck is filled before we run out of time").

Figure 4.1: Impact on Tonnage of Black Bin Waste Collected of Collecting from an Increasing Proportion of Houses – Urban



Source: DKM, based on case study data.

Figure 4.2: Impact on Tonnage of Black Bin Waste Collected of Collecting from an Increasing Proportion of Houses – Rural



Source: DKM, based on case study data.

What emerges is that:

(i) Once the proportion of houses collected from goes beyond a certain reasonable level, the scope for increasing tonnage collected in a particular shift is very limited.

(ii) On the urban route, beyond a 40% proportion there is effectively no more scope to increase tonnage collected within the same shift.

(iii) There is slightly more scope on rural routes, but even here, moving from a 50% proportion to 100% only allows an increase of 15% in tonnage collected on the same shift[59].

(iv) On both the urban and rural routes, beyond a certain proportion of houses collected from, the truck must make two trips to drop-off waste.

(v) One would expect that the distance travelled and hence fuel usage to fall as the proportion of houses collected from increases. However, the effect is marginal, because the bulk of distance travelled is to and from the route rather than on the route.

In summary, measuring the scope for economies of density on a route is complex, and dependent a number of factors. Our analysis indicates that, in the case studies considered, where the suppliers are well-established and have gained reasonable share of customers on a route, the scope to further reduce costs by increasing customer densities is very limited. What this comes back to is the fact that the basic operational unit in the household waste collection sector is the truck. So long as the trucks in the supplier's fleet are well-utilised, increasing market share will not cut costs per customer served substantially.

[59] It should be noted that the proportions of houses collected from in the charts do not equate to market share. They relate to a particular route/shift, which is a small part of an overall market. Hence one should not use these charts to assess the efficient number of suppliers in a particular market (for example by dividing the proportion at which truck fills is optimised into 100 – which might indicate that there is more scope for efficient competition in rural areas than in urban areas). It is possible to have several suppliers in a particular market, each operating efficiently across the various combinations of routes they serve. The scope for suppliers to also collect commercial waste, particularly in rural areas, further underlines this.

Section 5: The Irish Household Waste Collection Market – Competition in the Market versus Competitive Tendering

5.1 Introduction

"Side-by-side competition is a more flexible and dynamic form of competition than competitive tendering. It provides a constant competitive constraint, rather than competition every few years, and is more responsive to changing technologies and market circumstances. It may also encourage greater innovation in the industry."[60]
The Competition Authority

Much of the analysis set out above attempts to highlight the benefits of competition versus monopoly provision, unless there is clear evidence that the market constitutes a natural monopoly situation.

The Programme for Government and the Department's discussion document envisage a situation where the private sector and local authorities could tender to provide services in an entire local authority area for a set time frame. It is also envisaged that while the successful bidder would have monopoly rights to provide services within the designated market for a set period of time, that the monopolist's behaviour would be "regulated" by the need to adhere to contractually agreed service levels etc.

The issue is, however, would competitive tendering or competition for the market deliver a better outcome for consumers than competition in the market, and is government intervention to alter the structure of an already seemingly competitive market justified on consumer welfare grounds. In considering the relative merits of the two models of service delivery, it should be noted that competitive tendering or franchise bidding is a common form of provision of household waste collection services in other countries. However, it would appear that this was the model that was used to introduce competition into a market which previously had been monopolised by a public sector provider. The situation in Ireland is clearly different. Private operators have been active in the market for many years and the evidence outlined in Section 4 indicates that the market is already highly competitive.

It would be extremely unusual for a government to intervene to introduce competitive tendering in a market which has already developed with significant competition "in the market". It is essential therefore that the benefits to consumers from such an intervention are significant enough to more than outweigh all the potential costs of altering the system of competition in the market.

[60] The Competition Authority submission. Op.cit, page 11.

5.2 Impacts on Choice, Service Quality, Dynamic Efficiency and Costs

As indicated earlier, there is no evidence to support a claim that the market for household waste collection services constitutes a natural monopoly or that significant efficiency gains would be achieved by having just one provider of services in each local authority area.

Based on our assessment of the minimum efficient scale of operations, there is no cost rationale for having a single monopoly provider of services. In all local authority areas there is room for at least two and usually significantly more operators to operate efficiently and profitably.

Moreover, while competition for the market provides the next best solution to a fully competitive marketplace, it is essential that the "risks" associated with such a structure are recognised.

A competitive tendering process should of course generate significant rivalry between firms – but the timing is different than under normal competitive processes. Firms seeking to win the contract will be competing head-on only once every five years (or whatever the period is for service provision), rather than the constant, daily rivalry that they face under the present model of competition in the market.

This "winner takes all" situation means that bidders have an incentive to under-cut rivals at this point in time – otherwise they risk being excluded from the market for many years. There is a risk, therefore, that bidders will "under-price" the service to ensure that they win the initial contract but then have to resort to cutting corners to actually deliver the service.

In addition, this type of winner takes all situation could also increase the risk of "predatory" pricing strategies by some large companies who may be bidding across local authority areas, which would be aimed at excluding rivals from the market. While they might be operating at a loss in the short run, they may calculate that in the longer term they can recoup these losses by charging higher prices in successive contracts. Alternatively, if they are bidding across local authority areas, they may be able to cross-subsidise lower prices in areas where competition is likely to be more intense by charging higher prices where they face less competition.

This makes it extremely important that the service contract is not only comprehensively specified but also that rigorous monitoring and control mechanisms are in place to ensure that service levels are maintained. This would, of course, add to the management and monitoring costs associated with competitive tendering.

Moreover, it is important to remember that in this type of franchise bidding arrangement, the winning firm only has one customer i.e. the local authority or utility regulator. It is possible, therefore, that their commitment to service quality and customer support will be limited to what they need to deliver to meet the terms of the contract. The incentive for ongoing or continuous improvements in service levels is removed under this model of competition.

As indicated in Section 3, at the moment, there are several service providers in each of the local authority areas. Under a competitive tendering structure while the local authority/utility regulator may have a choice of providers, the ultimate consumer of the services would have no choice. If, as

indicated in the discussion document, the Department is concerned that "*many households do not have a choice of service providers or the service provider is a monopolist"* and sees this as a form of market failure – it is clear that under the alternative structure being considered by the Department that consumers truly would have no choice of provider and that the winning bidder would be a monopolist – albeit one selected by a competitive tendering exercise.[61]

One of the most significant criticisms of "competition for the market" is the fact that the winning bidder (the incumbent) will obtain a significant competitive advantage for subsequent tenders. The company will have a better understanding of the operation and dynamics of the particular market and of the likely cost structures. Moreover, as its infrastructure, processes and procedures etc. will already be in place, it will be in a far stronger position to bid for the new franchise than a "new entrant".

In this context too, it is clear that losing bidders would be significantly weakened by being out of the market for potentially up to 5 years. In fact, it is likely that the majority of the 60 or so firms currently active in the market for household waste collection would not survive – with all that implies for local direct and indirect employment. This is particularly true of small and medium-sized enterprises which may not have the resources to sustain their activities, particularly if they have been unsuccessful in the first round of tenders.

Indeed, because of the regional/local nature of many waste collection businesses, most operators would be extremely limited in the number of tenders that they could bid for under the model being proposed by the Department. Many of these companies have been in existence and operating efficiently for more than ten years. They have also invested in physical infrastructure, such as waste recovery and treatment facilities, in these areas. These operators cannot simply transfer their operations from one local authority area to another and therefore, if they fail to secure a contract in their current areas of operation, they are likely to be forced out of businesses.

It would appear, therefore, that there is a real risk a model based on franchise bidding for a single local authority area would discriminate against smaller, localised operators and make it virtually impossible to compete for such large scale tenders – and if unsuccessful, to survive beyond the tendering process.

Moreover, once the new market structure was in place, and albeit that new contracts would be tendered every 5 years or so, it would be extremely difficult for new entrants to enter the market as they would have to enter on a large enough scale to be able to service substantial geographic areas. This in turn would again exclude smaller operators and lead to a significant concentration of the national market for household waste collection services. So from a situation where barriers to entry are extremely low, the introduction of competitive tendering would introduce a major obstacle to new market entry.

[61] Experience in the last week or so, where Dublin City Council transferred its household waste collection business to a single operator, would not instil confidence. It is noted in the press that competitors have been "over-whelmed" with service inquiries from dissatisfied former customers of the Council's service. This option would of course not be open to them under the competitive tendering regime being considered by the Department.

As a result, from a situation today where there are some 60 service providers operating in the country, it would lead to a significant increase in the level of concentration within the industry and this in turn would have implication for the intensity of competition and the nature of rivalry within the sector. So the longer term impact of the introduction of franchise bidding could actually be to weaken competition in the marketplace with resulting adverse impacts on service quality, prices and consumer welfare.

While the model proposed in the Department's discussion document appears to focus exclusively on potential gains in productive efficiency from a move to franchise bidding, as indicated earlier, other efficiencies – including dynamic efficiencies – are equally as important in delivering benefits to consumers. While it may be possible to capture many of the benefits of normal competition through the competitive tendering process, the on-going pressure and incentive on firms to innovate and develop new and improved products and services will be significantly weaker – as they only face head-on competition every five years rather than every day.

Finally, the model of competitive tendering incorporates within it one important element that has a direct upward impact on costs: the requirement to comply with TUPE regulations. These regulations effectively place an obligation on those taking over a business to take on the existing staff of the business under the same terms and conditions, and we understand that this would persist through successive retenderings of the franchise. This could have an upward ratcheting effect on costs as time goes on, whereby inefficiencies could build up in the system but be difficult to eliminate in the absence of ongoing competitive pressures[62]. It represents a significant cost penalty on the competitive tendering approach compared to competition in the market, one that would have to be passed onto the consumer if the business was to be sustainable.

5.3 Implications of Horizontal and Vertical Integration

An important feature of the Irish household waste collection sector is the level of:

(i) horizontal integration with respect to commercial waste collection; and
(ii) vertical integration with respect to waste processing and disposal facilities.

Horizontal integration refers not only to separate commercial waste collection services run by the firms, but waste collection services that are *mixtures* of household and commercial. This is to be expected in a small market such as Ireland, especially outside the large urban areas, where there is less scope to specialise in purely household waste.

Our survey results reflect the level of integration in the sector. On average just over 30%[63] of the waste collected by the responding firms on their household waste collection services is in fact commercial waste. Only one of the 18 respondents reported collecting no commercial waste on

[62] Discussions with IWMA members point to a number of instances where private firms have taken over elements of waste management from local authorities, and have been required to take on staff at a significant cost penalty compared to open market pay rates. The presence of competition in the marketplace is seen as a key leverage to deal with these cost issues, but this would not apply in the case of competitive tendering.

[63] Simple average.

any of their household collections. Many of them also operate separate purely commercial collection services.

The following table sets out the reported breakdown of turnover in the responding firms by source:

Table 5.1: Breakdown of Turnover by Source, IWMA Survey

Activity	%age of turnover*	Number of respondents**
Household waste Collection	55%	18
Commercial waste Collection	24%	17
Gate Fees to waste processing facilities	8%	11
Recyclables sales	12%	17
Non-waste activities	2%	4
Total	**100%**	

*simple averages across respondents; **total respondents = 18

The firms report that just over half of their turnover is in respect of household waste collection services, with a further 24% coming from commercial waste. This is an important finding as it serves to underline the integrated nature of many waste collection businesses.

It is clear that any change in the structure of the household waste collection market will also have a significant impact on the commercial waste collection market. It is important that this is recognised and taken into account. This is particularly true of collectors in rural areas, many of whom are using commercial collections to optimise the economic efficiency of their collection routes and vice versa.

Because of this, if a single firm is awarded the contract to collect all household waste in a given local authority area, then the economics of commercial waste collection will also change. Unsuccessful bidders will be forced to rely exclusively on commercial collections to support their businesses (and waste management infrastructure) and in many instances it is likely that their commercial viability will be severely compromised. This in turn, could lead to a rise in prices for commercial collection, particularly in rural towns and villages where commercial waste volumes will be limited, and/or increased concentration in the commercial market as well, as companies are forced out of business.

In addition to horizontal integration, the survey results highlight the very significant vertical integration within the industry. Almost three quarters of the companies that responded to the survey reported that they also operate waste handling/management facilities. This ranges from waste transfers stations, MRFs, composting facilities, landfills as well as SRF production plants. In total, the waste processed annually was over 3.3 million tonnes (approximately half of which is household waste).

These private operators have invested heavily in waste infrastructure over the last decade to handle and treat the waste that they collect from their domestic and commercial customers. This

is investment that would otherwise have to have been at the expense and risk of the taxpayer. This highly vertically integrated industry structure has evolved over the last decade-and-a-half to meet the demands of consumers and regulation. Any proposed changes to alter the structure of the household waste collection market would have a major impact on this investment and this infrastructure.

In this context too, it is important to note that not only would a change in the structure of the market have a potential impact on existing investment but it could also damage future investment. This reflects the importance of "regulatory certainty" to enable companies to have sufficient confidence that they will be able to reap the benefits of their investment in coming years (and indeed to convince financial institutions to provide the capital for these investments). If companies and their financial backers are concerned that the regulatory landscape may change and they may be excluded from the market for some reasons, then they are clearly going to be less inclined to undertake any large scale investment. This will only be exacerbated by the current situation and the possibility that what many companies believe to be a "legitimate expectation" that they could continue to operate businesses that have been built up and invested in over many years with full government backing, could now be effectively taken away from them.

It is clear from our survey that the waste management industry displays a high degree of horizontal and vertical integration, and the case studies confirm this profile. As a result, centrally allocated/Head Office type overheads of these firms can be allocated across a wide range of activities, reducing the total costs of each. By the same token, the loss of any element of activity will reduce the range over which overheads can be spread, thus increasing the total cost of each.

The significance of this for proposals to reorganise the household waste collection sector can be considered at a number of levels:

1. Most immediately, there are implications for firms that provide mixed household/commercial waste collection services. If they lose the tender for household waste collection, they are highly likely to also lose their commercial business, as this is unlikely to be viable on a standalone basis, and also because the tender winner will have a significant advantage in competing for the commercial business.

2. Where firms lose household collection tenders, they will have fewer remaining business units over which to recover central costs. As with commercial collection, these other business units will have developed to match market circumstances. Some, particularly outside the large urban areas, may not be viable as stand-alone units, and loss of household collection may undermine the wider business. Smaller firms in more rural areas, are particularly vulnerable, as each collection service represents a more significant element of their total business, and remaining elements may not be in a position to compete

Again, the net result is likely to be a loss of competition in the wider waste management industry, with concentration in the hands of a small number of large players. As discussed in Section 2, this can be seen to have happened in the UK, where 45% of waste is collected by just two firms, and in other countries.

5.4 Other Considerations

The Question of Waivers

A key controversy with respect to charging consumers directly for waste management services has been the question of waivers for low income households. This is partly derived from the fact that direct charging has been a relatively recent development, prior to which households received the service free at the point of use.

We note that the Programme for Government commitment includes the statement: *'A public service obligation would include a fee waiver scheme for low-income households.'* We interpret this to mean that a tendering process would include provisions for waivers, i.e. that bids from providers would have to include a system of waivers and the winning bidder would have an obligation to collect from households that were not in a position to pay the full price for the service. It is not clear whether there would be any system of compensation or refund for operators with respect to this aspect of service provision.

In this regard, we would make two points:

1. If the service provider must recover the cost of waivers from its overall revenue stream with no compensation process, then the wider body of customers will be cross-subsidising those on waivers. This will increase the cost of the service to the generality of customers, and will increase prices above the economically efficient level.
2. In the case of other essential services – notably electricity, gas, telephone, etc. – there is no general system of waivers based on affordability. Eligibility is related to age, or permanent disability, and is paid for by the Department of Social Protection[64]. There is no cost as such on service providers or on consumers.

It is a well-established economic principle that where it is agreed that certain essential services have to be subsidised for social reasons, this should be done via the wider social welfare system, and not via cross-subsidisation of one group of consumers by another. This is independent of market structure. There is no reason why the same logic should not apply in the household waste collection sector; were it not to do so, consumers would face higher costs[65].

Regulation of the Sector and of tendering Processes

Likewise, it is a well-established principle that the tendering of public services requires careful design, execution and enforcement, if it is to deliver the promised benefits for the consumer. Experience with these processes is that they are complex, time consuming and can be very costly.

The commitment in the Programme for Government refers to a utilities regulator, but no such body exists at the moment. While a number of economic regulatory bodies are in existence, and it would make sense to add responsibility for regulating the waste industry to one of these, this will not be cost-free.

[64] http://www.welfare.ie/en/publications/sw107/Pages/1WhatallowancesareintheHouseholdBenefitsPackage.aspx

[65] It is likewise the case that consumers do not benefit from tax relief on their other (considerably more costly) utility bills, and there is no logical reason why they should do so for waste collection services.

Likewise, the running of a large number of tendering competitions will be a burden on the taxpayer. In most such cases there are single national concessions, or a small number of long term concessions (e.g. toll roads). Household waste collection will be an exception in terms of the sheer number of concessions involved.

On the other side, preparing bids will likewise represent a significant financial burden on bidders, which in the long run must add to the cost of the overall service, and ultimately must be passed on (in large part at least) to consumers.

Section 6: Conclusions

The purpose of this study is to analysis the economic aspects of the household waste collection sector in Ireland, and assess the potential impacts of the proposed changes to the structure of that market. Our findings can be summarised as follows:

- While competition for the market is the international norm, and a number of influential commentators have recommended it for Ireland, attitudes have evolved in recent years. Notably, the Competition Authority now indicates:

  "*The Authority recommends that competitive tendering is preferable where side-by-side competition does not appear to work well. The Competition Authority is generally in favour of retaining side-by-side competition, but only where it appears to be working well*".

  and

  "*Side-by-side competition is a more flexible and dynamic form of competition than competitive tendering. It provides a constant competitive constraint, rather than competition every few years, and is more responsive to changing technologies and market circumstances. It may also encourage greater innovation in the industry."*

- International evidence clearly points to the risk of increased concentration and a reduction in competition in tendered-for waste collection services (and other public services) over time. Given our demographic/spatial characteristics, Ireland would be vulnerable to this phenomenon.

- Analysis of the current market indicates a large number of firms operating in a dynamic and varied marketplace, which has been characterised by increased innovation and reduced costs for consumers over the years (where costs have risen for consumers, it has been in the context of previous public sector providers not charging the full cost of the service).

- There is a high degree of horizontal and vertical integration in the Irish waste management sector, reflective of the prominent role of the private sector, and the scale of the market. These impacts on the entire sector need to be considered when proposing to alter one element (i.e. collection).

- There is no evidence that household waste collection in Ireland represents a natural monopoly. Indeed, all the evidence is to the contrary. In virtually all local authority areas there are several firms offering services. Our survey found no cases of monopoly provision in the market. There is a large number of firms who have been operating successfully for a decade or more, under competitive conditions, with strong dynamism in the market. These are not the characteristics of a natural monopoly.

- Likewise, the case-study evidence indicates that economies of density, while present, are limited, and are not significant enough to justify intervention in the market.

- Our survey indicates that for counties where we had survey responses, 100% geographic coverage of the market is the norm. Lack of coverage only applies in extreme circumstances such as very mountainous environments which it is not possible to access with a waste truck. In these circumstances alternative arrangements such as bring points are generally in place. This was the case when local authorities provided the service, and would remain the case even if the service was put out to tender.

- According to the 2009 EPA National Waste Report, less than 8% of household waste was not collected and 19% of households did not avail of, or were not offered, a collection service. The survey evidence and feedback from market participants would indicate, however, that in the vast majority of cases, the existence of un-serviced households reflects the personal choice of the householder and not a lack of access to a collection service.

- DKM also considered whether affordability might be a factor in explaining the variation in collection uptake rates reported by the EPA by comparing the EPA figures with figures on income per head for each county. It is clear from these figures that there is no significant relationship or correlation between uptake and income.

- In view of these findings, it would not seem appropriate, therefore, to attempt to use supply-side measures such as fundamentally altering the structure of the market for household waste collection to try to address issues of consumer behaviour. It may be more appropriate to use other policy instruments, such as a requirement for households to use a recognised waste disposal mechanism, if the Government is concerned about the low level of uptake of waste collection services in some counties in Ireland.

- Prices charged to consumers by private providers of waste collection services have fallen significantly in recent years, despite increases in transport and other costs. This is partly reflective of falling landfill gate fees. The fact that these savings have been passed on to consumers is a demonstration of the benefits of the current competitive structure. It is open to question whether this would have been the case if the service were contracted out to regulated monopoly suppliers.

- It has been argued (by the 2009 *International Review* among others) that prices to consumers in Ireland are out of line with other jurisdictions, and that competitive tendering would act to remedy this. It is beyond the scope of this study to analysis costs and pricing in other jurisdictions. However, it has been argued that the *International Review* made a number of errors in its analysis of Irish prices and costs, and our findings confirm this. We would also reiterate that a number of factors make it difficult to compare Irish and other charging systems, not least scale, spatial development patterns (even in rural areas), and the charging system used in Ireland. Furthermore, as indicated, prices have fallen significantly in Ireland in recent years.

- A number of factors point to the potential for competitive tendering to cost more to consumers and taxpayers rather than less, notably:

- The loss of dynamic and allocative efficiency.
- The risk of the emergence of highly concentrated markets and the elimination of competition in tendered-for services over the long run.
- Artificial splitting of household and commercial waste collection services is likely to increase costs for both sets of customers, particularly in less urban areas where mixed services are the norm.
- The additional costs of designing, running and enforcing competitive tenders, and of preparing bids to participate in these tenders, as well as the risks of the tendering process not delivering the expected results for the consumer, due to errors, poor design, challenges, etc.
- The cost of waivers if these are to be included in the tender. Specifically with respect to waivers we would recommend that affordability issues be dealt with via the social welfare system, as is the case with other public utilities.

In summary, the economic case underlining the commitment in the Programme for Government and the subsequent discussion document, that the current system is not efficient and is costing consumers too much, is far from proved. On the contrary, all the evidence is that the system is working well, providing choice and service and passing cost reductions on to consumers, as one would expect in a properly working market.

The proposed alternative, of competitive tendering for the market, entails a number of significant risks that costs will rise rather than fall. It will also eliminate choice for the consumer, and will undermine the business model of many if not most of the companies currently in the market. These companies have invested in infrastructure and are providing significant employment throughout the country, in the legitimate expectation that they were acting in accordance with public policy.

Annex 1: DKM Survey Questionnaire

THE ECONOMICS OF HOUSEHOLD WASTE COLLECTION

As part of its response to the Department of the Environment, Community & Local Government's (DECLG) current consultation process on altering the structure of the household waste collection market, the Irish Waste Management Association (IWMA) has commissioned DKM Economic Consultants to undertake a study of the Economics of household waste collection services in Ireland.

As part of this study, DKM is carrying out a survey of the IWMA membership to gather information on market structures. Detailed case studies will also be undertaken with a small number of representative firms in different market segments.

We would stress that any information provided by you will be treated in the strictest confidence by DKM. A signed non-disclosure agreement with your company is attached separately.

Any information obtained as part of this survey will only be presented in an aggregated form in a report to the IWMA. This will not identify any individual company's data.

1. Company Details:

Company name	
Trading name if different	
Head office address	
Contact name	
Telephone	
Email	
Website	

2. Waste Collection Activities

Table 2 overleaf seeks to capture the nature and extent of your household waste collection activities.

Please describe the geographical areas as precisely as you can. Include details of Local Authority area, towns (part or whole), villages, etc., covered by the service. To illustrate the type of information required, we have included an example for a fictitious waste collection operator providing services in a number of different locations in Co. Down in Northern Ireland. (Please note, we are only looking for information on your services in the Republic of Ireland). Add additional lines to Table 2 or additional pages if necessary.

To assist with this, we are separately sending you a map of Ireland by post. We would be grateful if you could indicate the geographical areas of your household collection services on this map, adding, if possible, the corresponding letter for the area identified in Table 2 of this questionnaire. The map can also be used for subsequent questions in the survey if you wish.

We appreciate that completing aspects of this survey may be burdensome. Please give best estimates if exact data is not readily available.

2. Household Collection Services

Geographical Area [1]		%age Urban	Year entered this market	Total tonnage collected per annum [2]	%age split of waste collected		Number of household customers you have	What proportion of your household customers benefit from waivers %	Type of bins collected [3]	Number of Comm-ercial customers you have	The number of trucks you operate in this market [4]	Number of staff on these trucks [4]	Number of other staff necessary to serve this market [5]	Number of active competitors in this market currently	Your Market Share %
					Household	Commercial									
A	*Downpatrick, Co. Down, extending out to* ○ *Ardglass* ○ *Clough* ○ *Ballynahinch*	*40%*	*2008*	*1,400*	*70%*	*30%*	*1,000*	*20%*	*Black Brown Green*	*200*	*2*	*6*	*2.5*	*3*	*45%*
B	*Newtownards, Co. Down, extending out to* ○ *Comber* ○ *Mount Stewart*	*60%*	*2010*	*4,000*	*80%*	*20%*	*3,00*	*0%*	*Black Green*	*600*	*3*	*9*	*5.5*	*4*	*60%*
C															
D															
E															

Geographical Area [1]		%age Urban	Year entered this market	Total tonnage collected per annum [2]	%age split of waste collected		Number of household customers you have	What proportion of your household customers benefit from waivers %	Type of bins collected [3]	Number of Comm-ercial customers you have	The number of trucks you operate in this market [4]	Number of staff on these trucks [4]	Number of other staff necessary to serve this market [5]	Number of active competitors in this market currently	Your Market Share %
					Household	Commercial									
F															
G															
H															
I															
J															

(1) Please describe as accurately as you can. Include details of Local Authority area, towns (part or whole), villages, etc., covered by the service. If you wish you can draw in the geographical areas of your collection and other services on the map at the back of the survey, adding a number or letter to relate back to the tables.

(2) 2010 actual or estimate for full year.

(3) Black, green and brown bins.

(4) Use fractions of trucks or whole time equivalent staff as appropriate. Exclude staff in transfer stations, landfills and other waste processing facilities. Give best estimates.

(5) This could include for example, sales and marketing staff, line management and supervisors, back-office and customer support staff, credit control and finance staff, bin management etc. If these staff work across geographical areas, please apportion in relation to customer numbers in each area.

3. Do you operate other waste management services that take household waste that you collect? For example transfer stations, ADs, MRFs, landfills.

Name and type of facility		County in which situated	Annual Volumes processed*	%age of volume that is Household	%age of volume processed that is collected by you?	
					Household	Commercial
(a)						
(b)						
(c)						
(d)						
(e)						
(f)						
(g)						
(h)						
(i)						
(j)						

* 2010 actual or estimate for full year.

Add additional lines to the table or additional pages if necessary.

4. Company Turnover by Category.

Activity	% of Turnover
Household collection	
Commercial collection	
Gate fees	
Sales of recyclables and other outputs of waste processing activities	
Non-waste related activities	
Total	**100%**

5. Market Exit

Household waste collection markets exited by you in the last five years.

Geographic Area		Year entered	Year exited
(i)			
(ii)			
(iii)			
(iv)			
(v)			

Add additional lines to the table or additional pages if necessary.

What has been the predominant reason for exiting markets? (e.g. sale of business)

THANK YOU VERY MUCH FOR TAKING THE TIME AND EFFORT TO COMPLETE THIS QUESTIONNAIRE.