



Promoting competition in Sydney sewerage markets

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1 Introduction

1.1 THE TASK

1 Frontier Economics has prepared a Report on the issues that are relevant to the promotion of competition in Sydney water markets. In particular, we have been asked to consider:

- what market or markets might be relevant to the Application to the National Competition Council (the Council) by Services Sydney for Declaration of Sewage Transmission and Interconnection Services;
- whether the declarations sought in that Application would promote competition in the relevant dependent markets; and
- whether the declarations sought would promote the public interest.

2 This Introduction presents our understanding of the task we are required to perform. Section 2 of the Report presents some theory from the literature as to the circumstances in which it is appropriate to define markets in the absence of transactions. Section 3 surveys the empirical literature that bears on market definition in the provision of water and wastewater services. Section 4 examines whether attempts by other jurisdictions to introduce more-competitive structures in the provision of water services provides evidence of market boundaries. Section 5 assesses the market claimed in the Application against the evidence surveyed in Sections 3 and 4. Finally, Section 6 presents our conclusions.

1.2 THE CRITERIA

3 We have been instructed that, in making its recommendation to the relevant minister, the Council should consider the criteria contained in s44G(2) of the *Trade Practices Act*. This states:

The Council cannot recommend that a service be declared unless it is satisfied of all of the following matters:

- (a) that access (or increased access) to the service would promote competition in at least one market (whether or not in Australia), other than the market for the service;
- (b) that it would be uneconomical for anyone to develop another facility to provide the service;
- (c) that the facility is of national significance;
- (d) that access to the service can be provided without undue risk to human health or safety;
- (e) that access to the service is not already the subject of an effective access regime;
- (f) that access (or increased access) to the service would not be contrary to the public interest.

4 These criteria clearly envisage that at least two markets are relevant to the recommendation. The first (or primary) market is that in which the owner of the facility has market power. They have this market power because criterion (b) is satisfied. The second (secondary or dependent) market is that in which competition may be promoted if access (or increased access) to the service were obtained.

5 This Report is occasioned by the Application for Declaration by Services Sydney. The Report will therefore seek to show how the markets relevant to criteria (a), (b) and (f) should be defined when the Council is considering this particular Application. It will then seek to show how the declaration that is sought may affect competition in the relevant dependent markets and its effect on the public interest.

2 Defining markets when there are no transactions

2.1 THE MARKETS FOR THIS APPLICATION

6 Sydney Water undertakes a range of activities. These activities are undertaken in the provision of the following broad categories of final services:

- water services;
- waste water services; and
- storm water services.¹

7 The principal activities within each of these three categories of service are shown in a stylised way in Figure 1 below. The Figure is a useful way of organising the discussion in this Report – whose key question is which of these activities are related in such a way that they can be said to lie within the same market as each other. Transmission and distribution/reticulation differ in that the former transports water and wastewater via big pipes and the latter via small pipes. Customer Service involves billing, meter reading (for water), trade waste control (for wastewater), and customer service contact (dealing with complaints etc).

8 Some commentators have argued that the relationships between all of the activities in Figure 1 are of a kind that all these activities are most-efficiently undertaken within a single enterprise within any geographical region. As is explained in Section 5.2 below, this was the reasoning behind the 1973 reforms of the water industry in England and Wales.

9 Sydney Water does not undertake the full range of these activities. In the provision of water, it is not involved in water catchment. Sydney Water buys its

¹ Sydney Water, *2003 Annual Report*, p 10.

water from the Sydney Catchment Authority (SCA); and about 80 per cent of this water is collected in the Warragamba Dam.²

10 Sydney Water's responsibility with respect to storm water is limited to transmission, collection of rubbish and disposal. (The local stormwater services are the responsibility of councils and other bodies.) Sydney Water also is responsible for customer services for those customers who connect directly to their trunk drains.

11 In addition to this formal allocation of responsibility, Sydney Water elects to outsource many of the activities for which it has overall responsibility. Details are provided in Section 4.4 below.

² Sydney Water, *2003 Annual Report*, p 10.

Figure 1: Principal Activities within the Water Industry

Water	Wastewater	Stormwater
Catchment ↓	Disposal ↑	Disposal ↑
Treatment ↓	Treatment ↑	Collection of rubbish ↑
Transmission ↓	Transmission ↑	Transmission ↑
Distribution ↓	Reticulation ↑	Reticulation ↑
Customer service ↓	Customer service ↑	Customer service ↑

12 In *Sydney International Airport*, the Tribunal distinguished between two types of market: the market for the service subject to declaration and any other dependent markets.³ Those proceedings arose from an appeal by a decision of the relevant minister of certain services:

(1)...the service provided through the use of the freight aprons and hard stands to load and unload international aircraft at Sydney International Airport;

(2) ...the service provided by the use of an area at Sydney International Airport to: store equipment used to load/unload international aircraft; and to transfer freight from the loading/unloading equipment to/from trucks at the airport.

13 In defining the primary market, the Tribunal explored the market in which SACL offered the services to which access was sought. The Tribunal noted that airports typically provide a bundle of services and benefit from economies of scale and scope generated by strong network effects. Accordingly it defined the primary market to include all the principal activities undertaken by SACL; and it defined the facility to include all the principal items of infrastructure at the airport.

14 With respect, this seems to be the appropriate procedure. The primary market should be defined with reference to the criteria spelt out by the Tribunal for multi-product enterprises; and the facility should be defined so as to be consistent with the definition of the primary market.

15 This is not the approach taken to the definition of the primary market in the Draft Recommendation. The Draft Recommendation did not start off with a consideration of the activities of Sydney Water and it did not ask whether these activities fell within one market or many. Rather, it began from the definition of the facility. It then stated that each of North Head, Bondi and Malabar reticulation networks is a distinct facility. Under consideration of criterion (b), it then investigated whether each of these facilities is uneconomical to duplicate:

The Council concluded in its consideration of criterion (b) that the North Head, Bondi and Malabar Reticulation Networks were each a natural monopoly.

³ Para 80, p 40,770.

Accordingly, Sydney Water has natural monopoly power in respect of the provision of the transportation and interconnection services provided by each of the facilities.⁴

- 16 This approach is inconsistent with that of the Tribunal in the Freight handlers case. The better approach is to squarely face the question of whether the range of activities undertaken by Sydney Water constitutes one market or many. This is a critical part of the analysis needed to decide whether access or increased access will promote competition in a dependent market.
- 17 It is critical for the definition of the primary market. It is also critical for the definition of the dependent market. Criterion (a) requires that, before the Council recommends declaration, it must be satisfied that there is a market in which competition would be promoted by access. This means that there must be a market. The market claimed by Services Sydney is a market that consists of a subset of the activities that are currently being undertaken by Sydney Water. The Council must be satisfied that this constitutes a market.
- 18 The judgment of French J as a member of the Full Federal Court in *Singapore Airlines Ltd v Taprobane Tours WA Pty Ltd* (1992) ATPR 41-159 provides a classic exposition of the law relating to market definition. One of the passages that is often quoted is the following:

In competition law it [the concept of ‘market’] has a descriptive and a purposive role. It involves fact finding together with evaluative and purposive selection. In any given application it describes a range of economic activities defined by reference to particular economic functions (e.g. manufacturing, wholesale or retail sales), the class or classes of products, be they goods or services, which are the subject of those activities and the geographic area within which those activities occur. In its statutory setting the market designation imposes on the activities which it encompasses limits set by the law for the protection of competition. It involves a choice of the relevant range of activity by reference to economic and commercial realities and the policy of the statutes. To the extent that it must serve

⁴ Draft Recommendation, para 6.50.

statutory policy, the identification will be evaluative and purposive as well as descriptive.⁵

19 The passage contains two points that are highly apposite for the definition of markets in this matter. The first is that the concept of market has a special meaning in the context of competition law. That meaning involves describing a range of economic activities defined with reference to function, product and geography.

20 In its definition of the primary market in the Draft Recommendation, the Council does discuss the geographic bounds of the market, but it does not 'describe the range of economic activities' with respect to functions and products. That task was undertaken by the Tribunal in *Sydney Airport*; and it is a worthwhile discipline to undertake in dealing with every Application under Part IIIA.

21 The second apposite point made in the quotation from *Singapore Airlines v Taprobane* is that the definition of the market(s) in the context of competition law is both purposive and descriptive. Because the definition of the markets will have implications for the rights and obligations of enterprises, the court or the regulator must accept that markets must be defined in accordance with the policy of the relevant statutes and the question which is to be determined in the matter in issue.⁶

22 In this particular case, the definition of markets will have critical implications for the rights and obligations of Sydney Water and, indeed, for parties in the future as they participate in the Sydney water industry (to use a non-statutory term). As is common in the consideration of applications under Part IIIA, the task of market definition is purposive.

⁵ *Singapore Airlines v Taprobane*, pp 40,169-70.

⁶See Decision of the Competition Tribunal in *Re ACCC by Australian Association of Pathology Practices*, 7 April 2004, para 108..

2.2 MARKETS NORMALLY REQUIRE TRANSACTIONS

23 The seminal definition of market within the context of the *Trade Practices Act* was provided by the Trade Practices Tribunal in *Re Queensland Co-operative Milling Association Ltd and Defiance Holdings Ltd* (1976) ATPR 40-004. In that decision, the Tribunal defined a market as the area of close competition between firms; and it gave a prominent role to transactions:

So a market is the field of actual and potential transactions between buyers and sellers amongst whom there can be strong substitution, at least in the long run, if given a sufficient price incentive.⁷

24 The reference to actual and potential transactions in the *QCMSA* definition, when combined with the precept (quoted above) of French J, seems to suggest that, if a group of economic activities lies wholly within an enterprise, then the market must be at least as large as the group of activities. This was a key issue in the appeal to the High Court from the decision of the Full Federal Court in *Queensland Wire Industries Pty Ltd v The Broken Hill Proprietary Company Limited & Anor* (1989) ATPR 40-925.

25 BHP's steel division sold Y-bar only to its associated company, Australian Wire Industries. The Full Federal Court found that, because the sale was to an associated company, there was no effective sale outside the company and, for this reason, there was no market for Y-bar. In effect, it found that the process of making steel and steel products was in the same market as the process of converting the Y-shaped steel into star-picket fence posts.

26 The High Court rejected this reasoning and found that it was appropriate to allocate these two functions into separate markets – although the reasons differed among the various judgments. Three of the judgments addressed the issue of whether actual trades were necessary in order to determine the boundary of a market. Each stated that actual trades were not necessary. In the words of Deane J:

⁷ *QCMSA*, p 17,247.

[A] market can exist if there be the potential for close competition even though none in fact exists. A market will continue to exist even though dealings in it be temporarily dormant or suspended ... [and even if] there is no supplier of, nor trade in, ... goods at a given time – because, for example, one party is unwilling to enter any transaction at the price or on the conditions set by the other.⁸

27 The issue was considered shortly after the decision of the High Court in *Queensland Wire* by Professor Brunt in a well-known paper on market definition. Brunt argued that the approach of the High Court to market definition in *Queensland Wire* was consistent with the definition of a market by the Tribunal in *QCMA*⁹ where the Tribunal said that a market is the field of both actual and potential transactions:

The market is the network of actual and potential transactions between buyers and sellers of goods or services which are, or could be, close substitutes. Under what circumstances, we may ask, would the potential for transactions not exist? Answer: when there are such efficiencies of vertical integration, as between Y-bar and star pickets, that market co-ordination between buyers and sellers is superseded by in-house co-ordination. There would, in such a case, be no functional split to create market transactions between stages of production.¹⁰

28 In this passage, Brunt is contrasting two different methods by which vertically-related activities might be co-ordinated: the co-ordination may take place within an enterprise ('in-house' co-ordination) or across independent enterprises by means of contract ('market co-ordination').¹¹ Where co-ordination across vertical stages is wholly within an enterprise, one would normally define a market as embracing all those stages. However, if co-ordination within the vertical chain is

⁸ As quoted in judgment of McHugh ACJ and Gummow, Callinan and Heydon JJ, *NT Power Generation Pty Ltd v Power and Water Authority & Anor* [2004] HCA 48, 6 October 2004, para 109.

⁹ *Re QCMA and Defiance Holdings* (1976) ATPR 40-012 p 17,247.

¹⁰ Maureen Brunt, "Market Definition' Issues in Australian and New Zealand Trade Practices Litigation", ((1991) republished in *Economic Essays on Australian and New Zealand Competition Law*, Kluwer Law (2003), pp 185-238, at 229.

¹¹ The seminal author in the economics literature is Oliver Williamson. See his *Markets and Hierarchies*, Free Press (1975) and *The Economic Institutions of Capitalism*, Free Press (1985).

generally broken by means of a set of transactions, one would normally identify multiple markets – each of which ends with the set of transactions.

29 This rule becomes less helpful when one is considering refusal to supply cases – such as *Queensland Wire*. In such cases, the absence of a set of transactions may be a result of the refusal to supply, indeed, the absence of transactions may be the very conduct that is found to constitute the taking advantage of the market power. In this case, one may need to identify markets that are bordered not by actual but by potential transactions.

30 Brunt warns against drawing too hasty an inference that there is scope for potential transactions. She states that there is no scope for potential transactions where there are efficiencies of vertical integration. Where there are such efficiencies, in-house co-ordination will naturally supersede co-ordination by means of markets; and separate markets should not be defined.

31 Brunt's reference to 'efficiencies of vertical integration' is very similar to the language of the Tribunal in *Sydney International Airport* (2000) ATPR 41-754. That case was another that arose, in effect, from an allegation of refusal to supply. As with *Queensland Wire*, there was a dispute over the appropriate definition of the secondary market. The Tribunal noted that, for activities to be placed within the same market, there must be efficiencies of joint supply or joint demand of a kind that would normally cause them to be performed within the same enterprise:

The Tribunal was struck by the parallels here with the provision of railway track and train services. Though in the past usually vertically integrated, track services and the running of passenger or freight trains can be, and increasingly are, provided separately. As such, they operate in functionally distinct market, even though there is perfect complementarity between them. To put it another way, these complementarities do not appear to give rise to economies of joint consumption or joint production that dictate the services must be performed within the same economic entity.¹²

¹² *Sydney International Airport*, p 40.772.

32 Sydney Water provides a range of water, wastewater and stormwater services. Each of these services involves a range of functions and a range of geographical areas. Co-ordination of these activities takes place almost entirely within the enterprise: there are no naturally-occurring boundaries to markets within the activities of Sydney Water that are defined by means of actual transactions. If the Council is going to allocate the activities of Sydney Water among separate markets it should satisfy itself that the boundaries of those markets are places of potential transactions. It should not find such potential transactions when there are such efficiencies of vertical integration that market co-ordination between buyers and sellers would normally be superseded by in-house co-ordination.

33 This, of course, pre-judges the question of what might be meant by 'normally'. In this case, 'normally' should be taken to mean the structure that would emerge in the absence of inefficiencies introduced by monopolists or by governments. Given the lack of transactions between the various activities of Sydney Water, we must start with the presumption that those activities constitute one market rather than many. That presumption can be rebutted if the Council is satisfied that transactions would have been used to co-ordinate among certain groups of these activities had it not been for the inefficiencies imposed by Sydney Water (the monopolist) or by the State Government of New South Wales.

2.3 WHEN MIGHT TRANSACTIONS COSTS BE HIGH?

34 If the Council is to define primary and dependent markets within the activities that are currently being undertaken by Sydney Water, it is necessary to examine the evidence of potential transactions. As pointed out by Professor Brunt, this means examining the evidence as to the efficiency of breaking up the current integrated activities of Sydney Water and co-ordinating the separated activities by means of contract. The costs associated with co-ordination by means of contract are known to the economics literature as transactions costs. They involve principally the costs of negotiating and enforcing contracts.

35 Any judgement about efficiency must involve a comparison between alternatives. That is, one can only say that a particular arrangement is efficient in comparison

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with some other arrangements. In this case, the comparison is obvious: one must be comparing the costs of co-ordination among activities by means of contract with the costs of co-ordination among activities within an enterprise. To say that it is efficient to interpose co-ordination by means of contract is to say that co-ordination of these activities by means of contract is less costly than is co-ordination within an enterprise.

36 The costs of co-ordination within an enterprise are generally known as agency costs. These costs are the costs of attempting to co-ordinate within an enterprise – including the costs caused by malfunctioning of that co-ordination.¹³ The costs of co-ordination by means of contract are known as transactions costs. So the any judgement of the relative efficiency of co-ordination within an enterprise and co-ordination between enterprises by means of contract is essentially a comparison of the magnitude of agency costs and transactions costs.

37 The economics literature teaches that a classic source of transaction costs is *ex post* opportunism. This arises when A enters into a contract with B that requires B to invest in assets that have no alternative use apart from servicing the contract. Once B has invested in the assets, A may behave opportunistically and take advantage of B's sunk costs. This may lead to high costs associated with enforcing the contract. One solution is to guard against this occurrence *ex ante* by means of contract. However, it may be very costly to negotiate and enforce such a contract. The more-efficient solution may be to undertake both the A and the B activities within one enterprise.

38 One circumstance in which this problem arises is when A is a natural-monopoly distribution system and B is a potential investor in an asset that has no use other than in conjunction with the distribution system. How can the owner of the distribution system credibly commit to the potential investor to allow full cost recovery over the long life of the asset?

¹³ A useful survey is Bengt R Holmstrom and Jean Tirole, "The theory of the firm", pp 63-127 of Richard Schmalensee and Robert D Willig (eds), *Handbook of Industrial Organization*, Vol 1, North-Holland, 1989.

39 The problem has been extensively analysed in the context of telecommunications; but Noll has argued that the problem is even more important and even more complex in water systems.¹⁴ The problem is particularly severe because the long life of the relevant assets decreases the present value of the cost of lack of investment. Thus, a short-sighted owner of a natural monopoly asset may be tempted to behave in an opportunistic way – sensing that it is unlikely to bear any of the costs of its action.

40 The literature does suggest ways in which owners can move to increase the credibility of any commitments not to behave opportunistically towards potential investors.¹⁵ However, the threat can never entirely disappear. The issue demands great ingenuity on the part of the owner if the problem is to be overcome and competition in the related activity is to flourish.

41 The issue has complex implications for market definition. The danger of high transaction costs because of the danger of ex post appropriation is most acute in the case of bilateral monopoly. In cases where one natural monopolistic activity is vertically related to another, the danger can be expected to be particularly acute; and there may be a strong presumption that both activities should be included within the one market. However, if one activity can be efficiently supplied by multiple providers (such as water catchment, water treatment or waste water treatment and disposal) forcing the natural monopoly facility to deal with multiple providers is likely to reduce the incentive for it to engage in ex post appropriation because the contracts with each of the providers are likely to be renewed at different points in time. At any particular juncture the owner of the natural monopoly facility will know that, if it behaves opportunistically with respect to one provider, that behaviour is likely to make negotiations with another provider very difficult. In these cases, there is a strong presumption that the two activities fall within separate markets.

¹⁴ Roger G Noll, “The Economics of Urban Water Systems”, pp 43-63 of Mary M Shirley (ed), *Thirsting for Efficiency, the economics and politics of urban water system reform*, Pergamon, 2002, p 50.

¹⁵ See Arthur Lupia and Mather McCubbins, *Political Credibility and Economic Reform*,

2.4 EVIDENCE OF POTENTIAL TRANSACTIONS

42 There are two sorts of evidence of the efficiency of organising water services in different ways. The first form of evidence is direct measurement of the relative costs of different structures for the delivery of water services. Within certain countries there are different structures; and comparisons of these structures have been used by researchers to draw inferences about the relative costs of alternative structures. This evidence is summarised in Section 3 of this Report.

43 The second source of evidence is to examine the structures that have emerged in other jurisdictions and in other public utilities that have been exposed to competition. This evidence is based on the idea that, if an industry is allowed to develop within a sound general legal framework, then efficient market structures will emerge. In this case, one can examine structures that have emerged in the absence of the distortions that may be caused by monopoly or by poor government policy as evidence of those structures that may be efficient. Although this may be a useful source of evidence in the case of industries other than water, the traditional public utilities (gas, water, electricity and telecommunications) are generally subject to such intrusive law and regulation, that this form of evidence is rarely available. Section 4 of this paper summarises the lessons that may be drawn.

3 Evidence of the efficiency of potential transactions

44 Armstrong, Cowan and Vickers suggest that there is a number of feasible (they do not say efficient) structures for the water industry:

There are several feasible vertical structures for the industry. One option is to have integrated firms that supply water and collect and treat sewage. Alternatively the water and sewerage businesses could be separated. It is possible to separate water treatment and supply from distribution. Similarly sewerage services can be split into sewerage, which is essentially a pipeline business, and sewage treatment and disposal.¹⁶

45 Although there is a range of feasible market structures, not all feasible structures apportion activities among enterprises in ways that are efficient. If the Council is to define markets that embrace less than the whole of the current range of the activities of Sydney Water, it must be satisfied that it would be efficient to interpose contractual arrangements at the boundaries to the markets that it defines. This Section of the Report surveys the evidence of the efficiency of interposing contractual co-ordination between various groups of activities that are currently being undertaken by Sydney Water.

46 In drawing the boundaries of water markets, three sets of issues need to be addressed. These can be illustrated by reference to Figure 1:

- The first set of issues is that of the efficiency of multiple enterprises undertaking the same activity: in particular, is it efficient to have multiple suppliers of pipes?
- The second set of issues has to do with separation of the different services: is it as efficient to co-ordinate water, waste water and storm water by means of contract as it is within an enterprise?

¹⁶ Mark Armstrong, Simon Cowan and John Vickers, *Regulatory Reform: Economic Analysis and British Experience*, MIT Press (1994), p 326-7.

- The final set of issues has to do with vertical separation: is it as efficient to co-ordinate each of the activities needed to provide a service by means of contract as within an enterprise?

3.1 EFFICIENCY OF MULTIPLE DISTRIBUTION ENTERPRISES

47 Although the distribution network is often said to possess natural monopoly characteristics, one has to be careful in specifying what precisely this statement means. There are two principal sources of ambiguity. The first is that economies of scope may straddle different services (such as water and waste water) or straddle different activities (such as customer services, retail distribution, transmission and so on). If it is cheaper to provide these services together rather than separately, the market and the natural monopoly may embrace a range of services and/or a range of activities. These issues are examined in Sections 3.2 and 3.3 below.

48 The second source of ambiguity arises from the terms by which one might measure the scale of a particular activity needed to produce a particular service. For example, the scale of a retail water distribution system might be measured in terms of:

- the volume of water or waste water handled;
- the number of connections served; or
- the area covered.¹⁷

49 There is strong evidence that the retail distribution of water (and of waste water) within a given area exhibits decreasing costs. That is, costs of distribution increase less than proportionately with volume or with the number of connections. This evidence should not be taken to bear on the question as to

¹⁷ Stone & Webster, *Investigation into evidence for economies of scale in the water and sewerage industry in England and Wales*, Ofwat, January 2004, p 10.

whether an urban area may constitute a number of different retail distribution markets, each distinguished by its location.

50 The literature on the economics of water supply recognises that the different cost implications of increasing different measures of scale has, in turn, implications for optimal regulatory design. For example, Roth refers to evidence that if pipeline capacity is doubled, the total costs of construction increase by only 35-40 per cent. But he also notes that it is possible for different districts in large cities to be supplied from adjacent networks (as is the case in Guatemala City and Santiago) with no substantial loss of scale economies in distribution.¹⁸

51 This section of the Report reviews the effects on the cost of the distribution of water and wastewater from separating a large city (such as Sydney) into two or more independent enterprises. If such separation involves no significant diseconomies of scope, it may be appropriate to infer that Sydney's retail water and waste water distribution comprises multiple markets.

52 One has to be very careful about drawing inferences from cost studies in jurisdictions whose institutional arrangements are markedly different from our own. One of these differences relates to the size of the networks of pipes. For reasons of history, Japan and the United States have networks that are very small compared with that of Sydney Water.¹⁹ If scale economies are evaluated at the means of the sample data, the evidence of economies of scale from these much-smaller networks may have little relevance to the Sydney Water pipes. Studies of water companies in England and Wales provide evidence of most relevance to Sydney.

¹⁸ Gabriel Roth, *The Private Provision of Public Services in Developing Countries*, OUP for the World Bank, 1987, p 236.

¹⁹ See literature reviews in Stone & Webster, *Investigation into evidence fro economies of scale in the water and sewerage industry in England and Wales*, Ofwat, January 2004, pp 25-7; and GeoEconomics Associates Incorporated, *Economic Principles and Concepts as Applied to Municipal Water Utilities*, Final Report to the Ontario Superbuild Corporation, July 2002, Chapter 5.

Studies of England and Wales

- 53 Stone & Webster used data from the annual returns that the appointed companies submitted to the regulator for England and Wales (Ofwat) to estimate multiple-output cost functions. Their study found differences between the cost structure of the companies that undertake water and sewerage services (WaSCs) and the companies that only provide water services (WoCs). They found diseconomies of scale for the average-sized WaSC; and they could not reject the hypothesis of constant returns to scale for the average-sized WoC.²⁰
- 54 The average size of an enterprise cannot be summarised by a single number if the enterprises are producing multiple outputs; but the ‘base model’ in the Stone & Webster study, measured output in terms of water delivered (ML/day) The sample means (in 2003) were 1048 for the WaSCs, 200 for the WoCs. To compare these numbers with the size of an organisation undertaking both water and wastewater activities requires some adjustment. As a rough approximation, one must multiply the size of a WoC by 1.75 to get a comparable sized WaSC.²¹ The existing sewage throughput levels (average dry-weather) for the Sydney Water networks are: North Head, 313; Bondi, 130; and Malabar, 480.²² Unlike the WoCs, the Sydney networks are responsible for both water and wastewater, so even the Bondi network is substantially larger than the mean WoC in the UK.
- 55 The Stone & Webster results are consistent with other studies in England and Wales.²³ Together, these suggest that there are unlikely to be any particular economies of scale to be achieved by operating the three networks within one enterprise.

²⁰ Stone & Webster, *op cit*, pp 40-3..

²¹ Sydney Water’s wastewater flows are about 75 per cent of its flows of water. There are, of course, no figures for companies offering only wastewater activities because such companies do not seem to exist in the developed world.

²² Sydney Water, Submission to the NCC re Application by Services Sydney, para 55.

²³ See David S Saal and David Parker, “Productivity and Price Performance in the Privatized Water and Sewerage Companies of England and Wales”, *Journal of Regulatory Economics*, (2001), vol 20, pp 61-90.

56 We can summarise the lessons from this evidence as follows. It does appear that it would be efficient to organise the three distribution systems (North Head, Bondi, and Malabar) within separate enterprises and to co-ordinate the relations between them by means of contract. This does not imply that markets should be defined as co-terminus with these activities. Before that is done, one must consider the two remaining issues: (i) whether it is efficient to undertake the distribution of water and wastewater in separate enterprises; and (ii) whether it is efficient to undertake the various functions of the provision of water/wastewater services in separate enterprises.

3.2 EFFICIENCY OF SEPARATION BY PRODUCT

3.2.1 Empirical evidence of economies of scope

57 Stone & Webster tested for economies of scope between water and wastewater services. Economies of scope are defined as being present when the cost of providing services together is less than the sum of the costs of providing the same services separately. They used data from the annual returns of the WaSCs to Ofwat.

58 A 1995 study by Hunt and Lynk²⁴ analysed data from the regional water authorities prior to privatisation. It tested for economies of scope among water, sewerage and environmental services and found significant evidence of such economies. The Saal and Parker 2001 examined economies of scope, taking advantage of later data and more-disaggregated measures of output and came up with more ambiguous findings.²⁵

59 Stone & Webster attempt to disentangle the various sources of economies and diseconomies of scope. The problem is complicated because, as is clear from

²⁴ L C Hunt and E L Lynk, "Privatisation and Economic Efficiency in the UK Water Industry", *Oxford Bulletin of Economics and Statistics* (1995), vol 57, pp 371-88.

²⁵ David S Saal and David Parker, "Productivity and Price Performance in the Privatized Water and Sewerage Companies of England and Wales", *Journal of Regulatory Economics* (2001) vol 20, pp 61-90.

Figure 1, both water and wastewater services can be sub-divided into a number of vertically-related functions. Their analysis of the Ofwat data led them to conclude that economies of scope between water and wastewater services ‘...are to be found where the ability to share inputs across activities is greatest.’²⁶ This is consistent with much of the literature on economies of scope that cites as one of their principal causes the production of outputs that require certain inputs which can be shared among the different services – thus saving the cost of duplicating the inputs.

60 Stone & Webster give examples of sources of economies of scope between water and wastewater services:

- shared network management and common billing; and
- sharing of the purchase of power and chemicals for water and sewage treatment works.

However, they note that diseconomies of scope can arise when functions are joined between which there is no sharing of inputs, for example:

- sewage treatment/disposal and water connection; or
- water production and sewerage connections.

61 . It seems likely that efficiencies would be generated by combining certain activities across water and wastewater services. In other words, it would appear that economies of scope arise from the sharing of (i) managing the networks and (ii) the billing activities of water and wastewater services.

62 These efficiencies have implication for both the identification of markets and for the effects of declaration on patterns of competition. In particular, the study undertaken by Stone & Webster for Ofwat suggests that efficiencies may be got by combining the distribution, billing and customer service functions of water and wastewater services within a single enterprise. However, the study suggests

²⁶ Stone & Webster, *Investigation into evidence for economies of scale in the water and sewerage industry in England and Wales*, Ofwat, January 2004, p 47.

that efficiencies are unlikely to be generated from combining water collection with sewerage or from combining wastewater treatment and disposal with water services.

3.2.2 Economies from integrating billing and metering

63 Stone & Webster point to the obvious source of economies of scope in billing and metering through the sharing of the cost of reading, billing and the collection of debts. Another efficiency to be got by keeping these functions within the one enterprise may be the use of a user-pays system for wastewater.

64 This was one of the reforms introduced into Melbourne in 1994. Prior to that date, charges for waste water services had been based on property value. The new system had an element that was an estimate of the proportion of water used for sewerage purposes during each of the four seasons. The latter part was based on actual water used:

The new system is recognised as being fairer than the traditional system of charges based purely on property value; more empowering, since it gives people greater control over their water charges; and more environmentally responsible, since it encourages conservation by every consumer and discourages waste.

The user pays system has broad support: it is seen as a fairer system without hidden subsidies. In addition, it means that consumers will have some control over their water bills and have a financial incentive not to waste water. This contrasts with the former system that gave consumers no incentive to save water, and actually encouraged wasteful use. “User pays” pricing therefore will have important water conservation outcomes.²⁷

3.2.3 Economies from internalisation of externalities

Armstrong, Cowan and Vickers alert readers to an efficiency that may arise from combining the activities of planning the location of elements of a system. Although the authors place the source of efficiency under the heading of

²⁷ Victoria, Office of State Owned Enterprises, Department of the Treasury, *Reforming Victoria's Water Industry, The Restructured Metropolitan Industry*, p 12.

‘internalisation of externalities’, it also falls under the Stone & Webster heading of ‘integrated network management’:

Integration could also promote internalisation of some externalities. If a sewage treatment plant is located upstream from a water treatment works, then the costs of water treatment will generally increase as more effluent reaches the river. If one firm owns both plants, this particular externality is internalised. Note, however, that the effluent might affect parties other than the water treatment works and joint ownership of the two plants will not alleviate these third-party externalities. There is thus a strong case for external regulation of effluent discharges, and if this regulation is strong enough, this argument for joint ownership is weakened.²⁸

65 The various strands of literature on the efficiency of combining water and wastewater services in the one enterprise suggests that the separation of water and wastewater services at the retail/distribution end of those chains of production may cause significant inefficiencies. This would deny to enterprises efficiencies from combining the activities of network management, customer service and billing across water and wastewater services.

66 The current structure of Sydney Water is designed to take advantages of efficiencies from combining customer services of water and wastewater. Its Customer Service Division undertakes the following activities:

- Customer Operations (Customer Service Centres, Customer Contact Centre, Metering, Invoicing, Billing and Revenue Systems, and Incident Management);
- Development Operations (Development Services, Developer Performance, Supplier Management, and Water Restriction Enforcement);
- Business Operations (Plumbing Inspection and Assurance Services, Stream Watch, Site Logistics, Information Management, Performance and

²⁸ P 327.

Compliance Reporting, Ancillary Services, Business Performance and Improvement, Pricing and Policy and Social Policy);

- Strategy and Planning (Business Planning, Customer Strategy, Market Research, Internal Communications, Compliance Management, Customer Complaints, and Special Inquiries);
- Finance (Financial Management, Financial Reporting, and Capitalisation Management); and
- Customer Resource Management (Water Conservation and Recycling, Trade Waste, Backflow Prevention Containment, and Major Customer Services).²⁹

3.3 ECONOMIES OF VERTICAL SEPARATION

3.3.1 Separation of distribution and retailing of water/waste water

67 The business model proposed by Services Sydney in its Application for Declaration would have a business undertaking the treatment and disposal of wastewater competing for customers via access to a pipeline network. Discussions in England and Wales have contemplated parallel systems of competition in the provision of water services. Water suppliers could compete for customers via access to the pipeline network

68 There does appear to be a significant difference between these two models. In the case of wastewater, the ‘retailing’ function that Services Sydney proposes to undertake is confined to billing. Whereas the retailing function in the provision of water services may well involve the activity of risk management, similar to the activity of risk management in electricity. In the case of water, the risk that needs to be managed is the risk associated with insufficient availability of water. The

²⁹ Sydney Water Organisational Chart as at 22 September 2004.

risks associated with the provision of wastewater services are discussed in Sections 5.4 and 5.5 below.

69 Vickers and Yarrow are sceptical of the efficiency of separating out the retailing function for water supply. They argue that, certainly for household customers, the costs of coordinating between two interfaces is likely to far outweigh any benefit:

In theory, as in other network industries, it is possible to envision the separation of pipeline operations from, for example, the water supply (sales) business. Different water supply companies would then be able to compete for customers using the common pipeline network. However, because of the increased costs of coordination, the option is likely to be unattractive as far as domestic consumers are concerned ... While competition for the custom of large industrial and commercial users would be more feasible to arrange, it also has to be recognized that any resulting benefits from increased competition in supply are likely to be considerably less than in other utility industries. Unlike gas and electricity, the costs of “producing” water suitable for domestic consumption are relatively low in relation to the value added at the transportation stage.³⁰

70 The Application for declaration by Services Sydney explains its business model as including a direct interface with customers. They propose that one can define a ‘sewage collection market’ that embraces the following economic activities (to use the words of French J in *Singapore Airlines Ltd v Taprobane*):

- contracting with and billing the customer for sewage collection;
- treatment of raw sewage; and
- disposal of the treated waste.³¹

³⁰ John Vickers and George Yarrow, *Privatization, An Economic Analysis*, MIT Press, 1988, p 403.

³¹ Services Sydney also includes the transmission of the sewage from the customers’ premises as one of the activities a participant in the Sewage Collection Market would undertake. (See Draft Decision para 6.10.) However, this seems to be highly contrived. So far as I can determine from the materials, Services Sydney is planning at this stage to treat and dispose of wastewater - and to enter into a contract with the customer so that the cash flows directly to it rather than to Sydney Water.

71 Services Sydney argues that declaration would promote competition in the market that consists of this collection of economic activities. The Council cannot recommend declaration unless it is satisfied that this group of economic activities constitutes a market. Because this group of economic activities is merely a subset of the activities that Sydney Water has undertaken within the enterprise, this group of economic activities will only constitute a market if it is efficient to allocate the activities of the Sydney water industry among enterprises in this way.

72 The Draft Recommendation seems to use a test of feasibility rather than efficiency to determine this issue:

Sydney Water noted that Services Sydney did not propose in its application any mechanism to address the issue of collecting and treating sewage of different pollution load characteristics. The issue, however, is not whether Services Sydney's proposed business model appropriately deals with the issue of heterogeneous sewage collection and treatment. Rather, it is whether practical and reasonable commercial arrangements can be entered into between service providers to deal with the issue. If they cannot and the transaction costs are exceedingly high, the transportation and interconnection services are unlikely to be economically separable from the retail service.³²

73 The Draft Recommendation proceeds to note that,³³ if Services Sydney's application were successful, the ACCC would have the power to arbitrate disputes as to the terms and conditions of access. As was stated above, many allocation of activities among enterprises can be made to work – depending on the framework of law and regulation that governs the industry.

74 The Draft Recommendation appears to conflate two distinct issues: the question as to whether there are two separate markets and the second, and very much subsequent question, as to the terms on which access should be granted. The second can only arise if the Council and the designated Minister have been satisfied as to the first. The Council cannot abrogate to the ACCC the very

³² Draft Recommendation, para 6.25.

³³ Draft Recommendation, para 6.28.

question that it must determine in deciding whether or not criterion (a) is satisfied. The Council must itself determine whether the sets of activities contained in Sydney Services proposed business plan constitute markets. It must determine whether the relative transactions costs and agency costs enable market boundaries to be drawn.

75 The empirical evidence reviewed above suggests that the sets of activities grouped together by Sydney Services do not constitute markets. This is so for two principal reasons. In the first place, it separates the customer interface in water services from the customer interface in wastewater. As was shown earlier in this Section, this separation is likely to be inefficient. Secondly, the group of activities proposed by Services Sydney separates the (wastewater) distribution activity from the (wastewater) customer interface. Again, most commentators and industry experts believe this to be inefficient.

3.3.2 Separation of reticulation from treatment and disposal of waste water

76 The evidence supports the possibility that independent contractors could undertake the treatment and disposal of wastewater. Stone & Webster found that there were diseconomies of scope between the volume of raw sewage and the number of sewerage connections. This led them to suggest that there may be diseconomies of scope between the collection of waste water and its treatment/disposal:

This finding is consistent across the total opex and total cost models. The implication of this finding would be that sewerage services could be more efficiently provided by separating the business functions of treatment & disposal and waste water collection.³⁴

³⁴ Stone & Webster, *Investigation into evidence for economies of scale in the water and sewerage industry in England and Wales*, Ofwat, January 2004, p 47.

77 Although the evidence is not strong, it may be possible to put it to a market test. Vickers and Yarrow think that the boundary between waste water collection and treatment/disposal is an obvious place for transactions to occur:

Of rather greater significance [than the possibilities for retail competition in the provision of water] are the opportunities for promoting competition in the downstream operation of sewage treatment. Currently, the water authorities collectively own around 6,500 sewage treatment works which, prior to re-organization in 1973, were operated by a large number of different local authorities. Scale economies are not sufficiently great to justify high levels of either national or regional concentration in this activity, and it would be possible to have a relatively large number of firms, whether publicly or privately owned water authorities/companies.

More generally, competition in the industry could be increased by the more widespread adoption of franchising. Water authorities already discharge some of their functions via both the statutory water authorities (water supply and distribution) and local authorities (sewerage). Apart from sewage treatment, it would also be possible to contract out economic activities such as the maintenance and construction of the pipeline networks themselves. Thus, although natural monopoly conditions hold in the basic transportation services of the industry, and although there are strong arguments for maintaining the organizational link between pipeline operations and the provision of service to final consumers (at least for smaller customers), this does not necessarily imply that forward and backward integration from these activities is desirable.³⁵

78 The obvious way to test whether this is a place for market transactions would be for Sydney Water to offer an efficient component price for the supply of raw sewage. The efficient component price would be equal to the amount that Sydney Water would save by being relieved of the obligation to treat and dispose of the sewage. That is, the price would be negative: Sydney Water would pay a potential

³⁵ John Vickers and George Yarrow, *Privatization, An Economic Analysis*, MIT Press, 1988, pp 403-4.

entrant an amount to relieve it of its obligation to treat and dispose of the sewage.³⁶

3.4 LESSONS FROM THE EMPIRICAL LITERATURE

79 If the Council is to be satisfied that the activities of Sydney Water can be subdivided into separate markets, it must be satisfied that there is a potential for transactions between the groups of activities. Potential transactions exist when it would be efficient to allocate activities among enterprises and for co-ordination among the resulting enterprises to take place by means of contracts.

80 There is prima facie evidence that it may be efficient to divide the activities of Sydney Water into a number of enterprises. The evidence that has been reviewed in Section 3 of this Report suggests that any allocation of activities among enterprises should follow the following principles:

- a. The retail businesses should combine the activities of billing, customer service, and distribution of water and wastewater within each region. Economies of scale and scope suggest that these activities together constitute a natural monopoly.
- b. In the context of this Application, and providing the retail businesses combined the activities outlined in (a) above, there may well be within Sydney three separate retail natural monopolies, serving the regions of North Head, Bondi and Malabar.
- c. The activities of bulk water supply and wastewater treatment/disposal seem to be separable from the activities included in the retail activities included under the first point above. It would seem appropriate to define these two activities as separate markets. These markets are not natural monopolies.

³⁶ The standard work on efficient component pricing is chapter 7 of William J Baumol and J Gregory Sidak, *Toward Competition in Local Telephony*, MIT Press, 1994.

- 81 If these principles of market definition are accepted, the Application by Services Sydney must fail because the Council could not be satisfied under criterion (a). That states that the Council must be satisfied that access (or increased access) to the service would promote competition in at least on market other than the market for the service.
- 82 According to the above principles, this criterion cannot be satisfied for two reasons. The first reason is that claimed dependent market is not a market, that is, it is not bounded by potential transactions. The second reason is that the services (transmission and interconnection) are activities that lie within the natural monopoly retailing market defined under principle (a); but this is also true of some of the activities included within the claimed dependent market. That is, it cannot be said that the dependent market is a market ‘other than’ the market for the services to which access is sought

4 Evidence of the existence of markets from other jurisdictions and other industries

83 The preceding Section of this Report examined the empirical evidence of the relative efficiencies of co-ordinating the various activities in the water industry by means of contract compared with co-ordination within a single enterprise. A second form of evidence might be available. This is to look at comparable industries to see whether markets have emerged in response to competitive pressure. If markets have emerged in response to competitive pressure, this will create a presumption that these market forms are efficient and it is possible that this provides evidence as to where it is appropriate to draw the boundaries to markets among the activities that are currently undertaken by Sydney Water.

84 Consideration of water industries in other jurisdictions and of other public utilities (gas, electricity and telecommunications) reveals a wide range of forms of competition. Almost all discussions of competition in the water industry rule out of consideration forms of competition that require the duplication of networks. This stems from the well-recognised natural monopoly characteristics of networks. Although the duplication of distribution networks can be disregarded, many other forms of competition have been tried.

85 In this Section of the Report, we look at the various forms of competition that can be found in water industries in other jurisdictions and other industries and ask whether they have emerged in response to the forces of competition. If they have, there will be a presumption that, at least in their contexts, the market structures that support them are likely to be efficient.

86 We consider

- yardstick competition;
- competition for the market: franchising; and
- contracting out.

87 Each of these kinds of competition implies different patterns of contractual relationships and each may suggest different patterns of market boundaries. That does not mean that market boundaries, for the purpose of the decision of the Council, will follow whatever forms of competition it sees fit to encourage. Some of the patterns of contractual arrangements that are encouraged by some jurisdictions may be highly inefficient: they may be as much a pattern of sloppy decision-making by governments as is a pattern that allows for no forms of competition at all. Nevertheless, the experience of different jurisdictions with different patterns of contractual relationships is suggestive of the relative efficiency of particular patterns and, thus, the experience is suggestive of boundaries to markets in water systems.

4.1 YARDSTICK COMPETITION

88 Yardstick competition is a way of placing competitive pressure on businesses that operate local natural monopolies. An influential 1985 paper by Andrei Shleifer proposed a system whereby the price of any particular firm would be set by regulation at the unit cost level of other firms. This would give the first firm an incentive to reduce its costs. Because a similar system of regulation would apply to all firms, each would have an incentive to keep its costs low.³⁷

4.1.1 First case study of yardstick competition: England and Wales

89 Prior to 1974, the water industry of England and Wales was highly fragmented with water supply, wastewater, stormwater, rivers and regulatory functions divided among a large number of entities. This was changed with the Water Act 1973, whose guiding principle was that

a single body should plan and control all uses of water in each river catchment, a principle generally known as ‘integrated river-basin management.’ Each water authority was entrusted with responsibility for water supply, sewerage, sewage

³⁷ Andrei Sheifer, “A Theory of Yardstick Competition”, *Rand Journal of Economics* (1985), vol 16, pp 319-27.

disposal, water resource planning, pollution control, fisheries, flood protection, water recreation, and environmental conservation in its own area.³⁸

90 The reorganisation of 1974 led to the establishment of ten publicly-owned, highly-integrated, regional water authorities. The successors of these regional water authorities became the water and sewerage companies (WaSCs). These were privatised in 1989.³⁹

91 The reforms of 1974 preserved the position of 29 private statutory water-only companies (WoCs) that were a remnant from the historical separate development of water and wastewater services. These WoCs were permitted to keep supplying water as agents of the regional authorities.⁴⁰ So, the privatisation of the WaSCs in 1989 increased the number of privately-owned water companies in England and Wales from 29 to 39. Each of these was made subject to regulation by the new water regulator, Ofwat.

92 At the outset, Ofwat was thwarted in its attempt to introduce Shleifer-style benchmark competition by a lack of information. In its first decade, it put great efforts into improving its access to cost information and into sophisticated attempts to analyse that information. The publication of comparative cost and service information “...revealed disparities between companies and the opportunities for arbitrage of various forms. Capital market competition through take-overs and mergers is one way in which these opportunities have been taken up.”⁴¹

93 A remarkable feature of Ofwat’s benchmarking studies is their commitment to international benchmarking over many years. The one utility that has supported

³⁸ John Vickers and George Yarrow, *Privatization: An Economic Analysis*, MIT Press, 1988, p 390.

³⁹ Simon Cowan, “Competition in the Water Industry”, *Oxford Review of Economic Policy*, (1997) vol 13, pp 83-92.

⁴⁰ John W Sawkins, “The Development of Competition in the English and Welsh Water and Sewerage Industry”, *Fiscal Studies* (2001) vol 22, pp 189-215, at 190.

⁴¹ Sawkins, *op cit*, p 196.

this initiative is Sydney Water, which produces data in a form that is consistent with the metrics employed by Ofwat:

Sydney Water employs a reporter to audit and challenge the data in its submission to us, giving additional comfort that the data can be used to make meaningful comparisons with companies in England and Wales. The data used in this report for the other non-UK water enterprises comes from a variety of sources – mainly trade association publications and annual reports and accounts. Different definitions and assumptions in these sources will mean that information is not completely comparable to that defined in the June return that the companies in England and Wales submit to Ofwat.⁴²

94 Ofwat uses its benchmarking studies as an input into its process of setting price limits. The first price limits were set by Government in 1989. Ofwat set new price limits in 1994, 1999 and is currently finalising the setting of price limits for the period 2005-10.

95 A separate price limit is set for each company for each year. The price limits are expressed as K factors. They limit the annual average increases in customers' bills to the rate of inflation plus, or minus, the specified K factor. Each company is given an efficiency target, with tougher challenges being imposed on those companies that Ofwat believes are the least efficient.⁴³

96 Sawkins claims that yardstick competition is the outstanding success of the water reforms in England and Wales:

From the beginning, comparative competition was, undoubtedly, one of the most effective regulatory devices at Ofwat's disposal. The early publication and dissemination of comparative statistics served to inform key industry stakeholders of the relative positions of individual companies along several dimensions of performance. Armed with this information, the stakeholders – regulators, water company customers, shareholders and the government – began to seek explanations from individual organisations regarding the gross disparities in

⁴² Ofwat, *International comparison of water and sewerage service, 2001-02 report*, March 2004, p 4.

⁴³ See Ofwat, *Setting water and sewerage price limits for 2005-10: Framework and approach*, 27 March 2003.

operational performance. This, in turn, prompted the companies to reallocate resources towards those dimensions of performance that were measured and reported. Consequently, the range and variance of these measures reduced as the new regulatory regime matured.⁴⁴

97 One problem with yardstick competition is that the competing firms may merge. This was acknowledged by a provision of the 1989 legislation that required that any proposed merger between large water companies would be referred to the Monopolies and Mergers Commission. In its consideration of the merger, the MMC was required to have regard to the principle that the ability of the Director General of Water Services to make comparisons between water companies should not be impaired.

98 Ofwat has made clear its reluctance to countenance any mergers of WaSCs.⁴⁵ Nevertheless, there have been both WaSC/WoC mergers and WoC/WoC mergers since 1989, so that, although the 10 original WaSCs remain, the number of WoCs has been reduced from 29 to 12.⁴⁶

99 Ofwat has been supported by the MMC in its refusal to allow mergers between WaSCs. In 1996, the MMC objected to two alternative bids by WaSCs for South West Water on the ground that: ‘no remedy, even in the shape of very significant price reductions, would be sufficient to compensate for the loss of [South West Services] as a comparator’.⁴⁷

100 The survival of 29 WoCs following the reforms of 1974 was due to political, rather than economic, pressures. The existence of WoCs in England and Wales cannot be said to constitute evidence of any efficiencies of allocating water and wastewater services into separate enterprises. However, the pressure for mergers

⁴⁴ Sawkins, *op cit*, pp 206-7.

⁴⁵ Sawkins, *op cit*, p 200.

⁴⁶ Stone & Webster, *Investigation into evidence for economies of scale in the water and sewerage industry in England and Wales*, Ofwat, January 2004, p 4.

⁴⁷ Quoted in Simon Cowan, “Competition in the Water Industry”, *Oxford Review of Economic Policy*, (1997), vol 13, pp 83-92, at 85.

between WoCs and between WaSCs and WoCs in the period since 1989 does seem to be due to cost pressures. That is, it seems that patterns of emergence of market structures over time in England and Wales are consistent with the empirical evidence outlined in the preceding Section in that there seem to be economies to be got from organising the retailing of water and wastewater services within a single enterprise in any particular region rather than by dividing these activities among multiple enterprises.

4.1.2 Second case study of yardstick competition: Melbourne

101 From 1891 to 1994 a single organisation was responsible for all of Melbourne's water needs: water, wastewater and stormwater. The organisation was known as the Melbourne and Metropolitan Board of Works until 1992, when its name was changed to Melbourne Water.

102 The *Water Industry Act 1994* divided Melbourne Water into five separate organisations:

- Melbourne Water retained responsibility for catchment, treatment and transmission of water; transmission, treatment and disposal of waste; and transmission and disposal of stormwater;
- Three retail businesses were formed to undertake the distribution of water, reticulation of waste and customer service;
- Melbourne Parks and Waterways was formed to deal with parks, waterways and the impact of waterways on Port Phillip Bay.⁴⁸

103 Yardstick competition was the idea behind the creation of three distribution businesses in Melbourne from 1 January 1995:

The businesses have been established as State owned companies because this corporate form best replicates a commercial operating environment. The focus of each business is attaining best practice. This will be achieved by competing by

⁴⁸ Victoria, Office of State Owned Enterprises, Department of the Treasury, *Reforming Victoria's Water Industry, The Restructured Metropolitan Industry*, January 1995, p 4.

comparison – mainly with other regional businesses, but also with equivalent businesses interstate and internationally.⁴⁹ ...

The three retail businesses will “compete by comparison” in the service they offer their customers. Customers will be able to compare the performance, quality and service of their retail business with those in neighbouring regions to see that they get a fair deal. They will be assisted in this by the Office of the Regulator General, who will be making the same comparisons when reviewing the businesses’ performance and water industry charges. The Office of the Regulator General will develop and oversight a reporting regime which establishes comparable performance measures and ensure publication of relevant data at least annually.

For the first time, water customers have a means to evaluate their retail company against other retailers. Within any industry the publicising of a “league”⁵⁰

104 The ‘yardstick competition’ in Melbourne has not followed the pattern in England and Wales. The principal difference has been the respective power of the regulators. Ofwat has been active in securing and analysing a large data set about the quality and cost of service; it has used this information in setting prices. That is, the regulator used information about costs to put pressure on the prices that water businesses could charge – in an effort to extract efficiencies of operation and investment.

105 In Melbourne, the regulation of the distribution businesses has been divided between the Essential Services Commission (ESC)⁵¹ and the Government. The ESC was responsible for the licensing, performance monitoring, compliance auditing and the regulation of customer servicing arrangements; and the economic regulation of the water businesses, including price regulation, was the responsibility of the Minister for Water and the Department of Sustainability and Environment. This division of responsibility has meant that the ESC’s role in

⁴⁹ Victoria, Office of State Owned Enterprises, Department of the Treasury, *Reforming Victoria’s Water Industry, The Restructured Metropolitan Industry*, January 1995, p 5.

⁵⁰ Ibid, p 8.

⁵¹ Prior to 2002, the functions of the Essential Services Commission were performed by the Office of the Regulator-General.

facilitating yardstick competition has been limited to publishing annual performance reports of audited information about quality of service.

106 This is about to change. From 1 January 2004, the ESC became responsible for the economic regulation of water in Victoria. A Water Industry Regulatory Order made by the Governor in Council appears to establish a process for the ESC's price-setting task that is similar to that of Ofwat. It requires each business to develop a draft Water Plan and this plan will provide the basis for the ESC to determine the revenue requirement for the first three-year period that will begin on 1 July 2005. One of the responsibilities of the ESC in setting prices is to pursue efficiency improvements.⁵²

4.2 COMPETITION FOR THE MARKET: FRANCHISING

107 It may seem that, if a market is a natural monopoly then it cannot be subject to competition. This proposition was challenged by Demsetz in a well-known paper published in 1968. The paper promoted the idea of establishing an auction for the right to service a market that was a natural monopoly. The auction is structured so that the bidder who offers the most favourable terms will win the contract to supply. If the bidding process is competitive, then competition for the market should drive prices down to the lowest possible per-unit cost.⁵³

108 The winning bidder is awarded the contract to supply, with the terms of supply locked in via a service contract for the period of supply.⁵⁴ Competition *for the market* and provision of services by a *single provider* can lead to prices for services which would be obtained if the market was openly competitive.

⁵² Essential Services Commission, *Economic Regulation of the Victorian Water Sector*, Consultation Paper No 1, February 2004, p 23.

⁵³ Demsetz, H. (1968) "Why regulated utilities?" *Journal of Law and Economics* 11, p.53.

⁵⁴ The "locking-in" of the benefits of the competitive bidding process is achieved through the terms of the contract issued to the winning tenderer, and in particular, the maximum price cap in the licence. The maximum price cap ensures that the winning bidder is held to the terms under which the contract was awarded.

109 The proposal of Demsetz was subjected to an equally well-known criticism by Oliver Williamson in 1976. Williamson pointed out that competition for a naturally-monopolistic market will be limited if entry to the market entails substantial sunk costs – where sunk costs are those incurred by an entrant which cannot be recovered if the operator subsequently withdrew from the market. Williamson’s concern was that the competitive benefits of competition for the market may be overstated. Where sunk costs are involved incumbents will have sizeable advantages over potential rivals when contracts are re-tendered, thus diminishing the intensity of the rivalry between competitors.⁵⁵

4.2.1 Case study of competition for the market: France

110 In France, the 36,000 local government authorities (communes) are responsible for water and wastewater services. Prior to the Second World War, these responsibilities were carried out principally through public agencies. Since that time, these functions have increasingly been undertaken by private enterprises that have been granted exclusive concessions by the communes. By 1992, 75 per cent of the population of France had their water and wastewater services supplied by a private franchisee.

111 The franchise arrangements are of two kinds. In the first, the bidder finances, owns and operates the utility. The franchise is typically for 30 years; and it is conducted fairly much along the lines proposed by Demsetz: the franchise is normally awarded to the bidder that offers the best price-quality package as evaluated by criteria set out in the tender documents.⁵⁶

112 The second type of arrangement is more like a contracting out. The commune is responsible for investment in the physical assets and the private enterprise has a lease contract (“*affermage*”). It undertakes to supply, operate, maintain and offer

⁵⁵ See Oliver E Williamson, “Franchise bidding for natural monopolies – in general and with respect to CATV”, *Bell Journal of Economics* (1976), vol 7, pp 73-104.

⁵⁶ Paul Seidenstat, “Emerging Competition in Water and Wastewater Industries”, *Journal of contemporary water research and education*, (October 2000) No 117, http://www.ucowr.siv.edu/updates/pdf/v117_A2.pdf.

customer service. The typical length of the contract is 10 years; but some are for longer periods.⁵⁷

113 Some 50 private companies offer to operate these franchises. But, over recent decades, two companies have come to account for 75 per cent of the market. Contracts include a licence fee and clauses that govern pricing arrangements. The contractors charge customers for their services.

114 The performance of these arrangements is somewhat controversial. It has been argued that the boundaries of the communes are far too small to allow economies of scope in the provision of water services. It has also been argued that the popularity of franchising among the communes has been motivated by the desire of local mayors to avoid personal liability for damage caused by negligent provision of water services.⁵⁸

4.2.2 Lessons for market definition from practice of franchising

115 The patterns of competition for the market provide little evidence of the relative efficiencies of co-ordination by contract and co-ordination within an enterprise. These forms of competition, by definition, generally bundle the activities of the franchisor with those of the franchisee. The exception to this is the division between contracting out of operations on the one hand and the planning and ownership of infrastructure on the other. Experience of other jurisdictions provides some evidence that it may be efficient to have these two activities undertaken by separate enterprises and for co-ordination of these activities to take place by means of contract.

4.3 CONTRACTING OUT OF COMPETITIVE SERVICES

116 France and England are unusual among developed countries in allowing private ownership of water assets. Water and wastewater services were taken over by

⁵⁷ Steven Renzetti and Diane Dupont, "Ownership and Performance of Water Utilities", (2003), pp 9-19, at 14-15.

⁵⁸ A useful survey is provided by Renzetti and Dupont, *op cit*, pp 14-16.

governments in the nineteenth century largely because of the assumption by the public sector of responsibility for public health. Few governments are prepared to discharge their responsibility for safe water services via the regulation of a privately-owned business. Furthermore, as we noted in the preceding section, there are severe problems in devising contracts for investing in networks of pipes:

Local governments in the U.S. generally have not used franchising in privatising their water or wastewater systems. Turning over existing assets to private firms is fraught with potential negative political fallout from the beneficiaries of the status quo and the risk of poor performance of operators not under direct government control. Moreover, most public officials are aware of the limitations of traditional public regulation and the policy difficulties of attempting to switch to a French or British model.⁵⁹

117 Nevertheless, many governments have been persuaded that state organisations may not be the least-cost way of delivering water and wastewater services. The result has been a trend over the last 20 years, in the United States and elsewhere, to contract out the operation and maintenance (O&M) of pre-existing facilities and the design, building, operation and maintenance of existing facilities.

118 Contracting out of particular services may be efficient if the price demanded by the operator is less than the opportunity cost to the incumbent of providing the services in question. The price should include the cost of negotiating, monitoring and enforcing the contract; and the opportunity cost of in-house provision should include the costs of monitoring and securing good agency arrangements.

119 This rule leads to a prescription as to the way in which the incumbent should behave if it wishes to encourage efficient outsourcing of services: it should outsource the service if (and only if) the price demanded by the external contractor is less than the incremental cost to the incumbent of adding the service in question to its suite of other services.

⁵⁹ Seidenstat, *op cit*, p 10.

4.3.1 First case study of contracting out: Adelaide

120 SA Water is responsible for the provision of water and waste water services in Adelaide. On 1 January 1996, SA Water entered into a contract with United Water for 15.5 years to outsource the management, maintenance and operation of the city's water and wastewater assets. United Water is a consortium of Veolia Water, Thames Water and Halliburton KBR. The consortium manages water treatment, wastewater treatment, the networks of pipes and customer service – but not billing.

121 Customers who require service, contact the call centre of United Water direct. The contract between SA Water and United Water provides that customer service is one of the functions that SA Water outsources to United Water.⁶⁰

4.3.2 Second case study of contracting out: Sydney

122 Sydney Water contracts out 90 per cent of its capital works projects. This is done according to a range of models:

- design and construct;
- design, development and construct;
- project alliances; and
- (for major projects) BOO arrangements.

123 In 2003/04 total Sydney Water expenses were approximately \$1.6 billion, of which approximately two-thirds was accounted for by operations (1,108 million).

⁶⁰ www.uwi.com.au/frames_adl.php

Category of Expenditure	Expenditure 2003/04 (\$ million)	% of Operating
Contracted out	380.0	34.4
Spent internally	209	18.9
Bulk water purchase	122	11.0
Interest	193	17.4
Depreciation	153	13.8
Bank fees and tax	33	3.0
Write offs	17	1.5
Total	1108	100

Table 1: Contracting Out of Sydney Water Operations

Source: Sydney Water

124 The operations contracted out by Sydney Water include:

- the operation of the major water filtration plants (BOO contracts);
- the operation of a few smaller sewage treatment plants;
- the operation of the Gerringong Gerroa sewerage system;
- some routine maintenance; and
- meter reading.

125 Unlike Adelaide, the maintenance and operation of the core distribution network is not contracted out. The bulk of internal operating expenditure (\$168 million of \$209 million) is the cost of Sydney Water's own work force.

4.3.3 Lessons from experience of franchising and contracting out

126 The experience of contracting out of capital works and of operations suggests that the water services of the kind provided by Sydney Water embraces and utilises services from a wide range of markets. The experience of Adelaide (and many jurisdictions in the United States and France) suggests that the operation of major distribution system may constitute a separate market from the activity of planning for and providing the services of the distribution assets.

127 The experience of contracting out offers evidence of separating water from wastewater services in collection of water, treatment of water and treatment of wastewater. However, it offers little evidence of:

- separating the distribution systems of water and wastewater,
- separating the customer services for water and wastewater; or
- separating the billing of water and wastewater services.

5 The market structures proposed in the Application

128 The form of competition that is contemplated by the Application before the Council is that of a common carriage system. Although this particular allocation of activities into markets appears not to have been tried in water industries in other jurisdictions, it appears (at least superficially) to be similar to market arrangements that have emerged in gas and electricity, in Australia and elsewhere.

129 Even if water were exactly similar to gas and electricity in all respects, one should be careful in drawing inferences from the structures in those industries for the boundaries to markets in the provision of water services in Sydney. The markets that have emerged in gas and electricity are largely the response of decisions of legislators and regulators. These decisions may reflect sound judgements about the efficient place to draw boundaries to markets. But, as is the case with water, legislators and regulators do not always impose efficient arrangements.

130 Whether particular market structures in gas and electricity are or are not efficient, it is incontrovertible that they have emerged as a result of planning decisions: they have not emerged as a result merely of some impersonal market forces. Indeed, it has been persuasively argued, that the experience of these markets shows that their ability to function effectively depends very much on the precise rules and structures that are imposed upon them.⁶¹

5.1 MARKET BOUNDARIES PROPOSED BY SERVICES SYDNEY

131 The Council can only recommend declaration if it is satisfied that access (or increased access) would promote competition in a market other than the market

⁶¹ John McMillan, "Using Markets to Help Solve Public Problems", pp 73-89 of Takatoshi Ito and Anne O Krueger (eds), *Governance, Regulation, and Privatization in the Asia-Pacific Region*, The University of Chicago Press, 2004.

in which the service is supplied. In order to be satisfied of this criterion, the Council must be satisfied of the existence of two markets: the primary market and the dependent market.

132 Any market definition must ‘describe a range of economic activities defined by reference to particular economic functions (e.g. manufacturing, wholesale or retail sales), the class or classes of products, be they goods or services, which are the subject of those activities and the geographic area within which those activities occur.’⁶²

133 The primary market claimed by Services Sydney is the Sydney sewage transmission market. The activities undertaken within this market are not precisely clear from the materials before the Council. Nevertheless, the activities do include:

- a. wastewater services but not water services;
- b. wholesale sales to organisations such as Services Sydney;
- c. both small pipe and large pipe services;
- d. within the Sydney area.⁶³

134 It is not clear what customer services are included within this market. It is clear that the retail billing function is not meant to be included. But it is not clear whether the customer service function is meant to be included. The normal arrangement in a sewerage system is that, if there is a problem at the customer end – such as a back flow or a bad smell – the customer calls a call centre and a person is then sent to investigate the problem and see if it can be fixed. It is not clear from the Application whether it intends this set of activities to be allocated to the primary market or to the dependent market.

⁶² *Singapore Airlines v Taprobane*, pp 40,169-70.

⁶³ Services Sydney, Applications by Services Sydney for Declaration of Sewage Transmission and Interconnection Services, *Further Submission to the National Competition Council*, 19 July 2004, pages 2-3.

135 The allocation of these activities among the claimed markets may well influence the relative efficiency of transactions costs and agency costs – and so influence one’s judgement as to whether one can be satisfied that there is a potential for transactions. So some interpolation is necessary if the model is to be discussed. We shall assume in this discussion that all customer services (apart from billing) are to be included in the primary market.

136 The dependent market is characterised by Services Sydney as a ‘retail sewage collection services market’. The activities undertaken within this market seem to be:

- billing of final customers;
- interception and diversion of wastewater from the Sydney reticulation network;
- transporting of wastewater to treatment works;
- treatment of wastewater;
- disposal/recycling of treated wastewater.⁶⁴

137 The dependent market defined by the Application includes no water services. The activities included in the market are principally the treatment and disposal of wastewater. It is not unusual to contract-out this set of activities. The unusual feature of the market that is defined is that it also includes the function of billing the person who is provided with the service of having the wastewater removed. The market boundaries are similar those that have been proposed for England and Wales – except that they separate wastewater services from water services.

⁶⁴ Services Sydney, Applications under Part IIIA requesting recommendation, 1 March 2004, pp 14-16.

5.2 CASE STUDY OF COMPETITION VIA ACCESS TO THE NETWORK: THE INTRODUCTION OF COMMON CARRIAGE IN THE UK

138 The market boundaries proposed in the Application have some similarities to the common carriage system that has been proposed for England and Wales.⁶⁵ Both systems are based on a claim of similarity between the market structures proposed for water and the market structures that have been developed for gas and electricity. In those industries, competing sources of supply use a common network to supply products to final consumers. In the case of electricity, the function of generation is generally regarded as competitive (or potentially competitive) whereas the functions of transmission and distribution are not. This has caused many jurisdictions to introduce competition into the activity of generation by developing electricity markets; and part of the regulatory framework for these markets has been a system whereby the transmission and distribution operators provide common carriage for all generators.

139 The UK Department of the Environment issued a consultation paper in April 1996, *Water: Increasing Customer Choice*.⁶⁶ It proposed, among other changes, that water and wastewater pipes be available as a common carrier for competitor suppliers of water and wastewater services. Initially these services could only be supplied to customers using 250 mega litres of water or more a year. Incumbents would be required to set out terms and conditions of supply; but if these could not be agreed, the Director would have power to determine them. The paper invited comments.

140 The UK *Competition Act* 1998 came into force on 1 March 2000. Although it contains no specific provisions for common carriage, does contain a provision against the abuse of a dominant position. It was considered at the time that this

⁶⁵ One striking difference is that the system in England and Wales applies only to the provision of water (and not wastewater) services.

⁶⁶ United Kingdom, Department of the Environment, Welsh Office, *Water, Increasing Customer Choice*, April 1996.

provision may provide a legal framework for competition via use of common carriage. Guidelines published jointly by Ofwat and the Office of Fair Trading showed how this might be done. The Director General of Water Services was granted power to enforce the provisions of the *Competition Act* in the water and sewerage sectors in England and Wales. The Guidelines stated baldly that the Director would use his powers to deal with abusive conduct by dominant undertakings. “This will allow common carriage to develop where there are genuine opportunities for improved services to customers.”⁶⁷

141 Ofwat then required all water companies to publish access codes that set out their terms and conditions for common carriage. By Autumn 2000, all water companies had complied with this request – at least by publishing draft codes.⁶⁸

142 To some extent, these general provisions were overtaken by the *Water Act* 2003. This contains specific legislation to deal with access to water distribution systems – but not to systems transporting wastewater. Wastewater is not included because:

- (i) there was already significant competition among treatment plants which tender to undertake services for the WaSCs; and
- (ii) extending common-carriage competition to wastewater would be ‘complex and costly’.

The Government proposes that its framework for competition should apply to the selling of water and not to the provision of sewerage services. There is already a significant level of competition in sewerage and effluent treatment of sewage through, for example, stand alone, on-site facilities and tinkered removal and treatment of sewage and effluent. There is also an active market in waste minimisation consultancy services. The Government believes that to extend this further would require a complex and costly regime. Views were sought on extending competition in sewerage services in the Government’s previous

⁶⁷ Office of Fair Trading, *Competition Act 1998, Application in the water and sewerage sectors*, OFT 422, pp 19-20.

⁶⁸ R Hern, “Competition and access pricing in the UK water industry,” *Utilities Policy* (2001) vol 10 pp 117-27 at 118.

consultation paper on Competition in the Water Industry in England and Wales published in 2000. No interest was expressed among respondents for doing so.⁶⁹

143 From the summer of 2005, companies will be able to apply for either a ‘retail’ licence, which will entitle the holder to purchase water from an incumbent and to retail it, or a ‘combined’ licence which would authorise the holder to introduce water into an incumbent’s pipes who will then be obliged to carry it to the customers of the licence holder (‘common carriage’). The only customers who will be eligible to be supplied will be those who are likely to consume at least 50 megalitres of water a year. Ofwat estimates around 2,300 customers fall into this category. The *Water Act* 2003 provides for the making of secondary legislation to enable the legislation to operate.⁷⁰

5.3 TRANSACTIONS COSTS OF DEALING WITH QUALITY OF MATERIAL

144 Discussion of common carriage systems for any industry raises the problem of the quality of the material that is conveyed across the common network. In the context of water and wastewater, similar issues arise. The experience of electricity common carriage systems suggests that the problem can be addressed either by regulation or by contractual arrangements between the parties. Of course, these entail a cost:

Water operators tend to argue that these problems [differences of quality on a common network] are unique to water and that they rule out common carriage competition. Neither assertion is true. All network industries must ensure consistent minimum quality standards and technical compatibility in use of the network. In electricity, where failure to observe standards could bring down the entire system, voltage and frequency limits are tightly prescribed and monitored for all generators. In water workable common carriage competition will require specifying parameters for all water put into the network. Such parameters would

⁶⁹ United Kingdom, Department for Environment, Food & Rural Affairs, *Extending Opportunities for Competition in the Water Industry in England and Wales*, Consultation Paper, July 2002, para 35.

⁷⁰ Ofwat, *Annual Report 2003-04 of the Director General of Water Services*, HC 522, p 29.

include maximum levels for harmful substances, permissible ranges for substances that affect industrial processes or the network, and permissible ranges for such characteristics as color and turbidity.⁷¹

145 The issue for defining appropriate boundaries to markets is not whether it is possible to deal with differences in quality of wastewater within a common network. The issue, to repeat, is the relative cost of dealing with these issues within an enterprise and between enterprises. There is, of course, a third possibility. This would be to establish a regulator to deal with issues such as this. It is hard to see how this possibility can be incorporated within the framework of market definition that seems to envisage a simple binary choice between co-ordination within an enterprise and co-ordination between enterprises by means of contract.

5.4 THE ACTIVITY OF RETAILING WATER AND WASTEWATER SERVICES

146 In Section 5.1 above, we drew attention to a gap in the material before the Council: it is not clear how the Application allocates customer services between the primary and the dependent markets. It is clear that the dependent market has some interface with the customer; however, it is not clear what activities this interface includes. The interface is variously characterised in documents submitted by Services Sydney as ‘retailing’ or ‘collection’.

147 The Marsden Jacobs Report argues that there are two relevant dependent markets: collection and treatment. It implies that access to the services provided in the transport market are necessary to promote competition in the collection and the treatment markets:

⁷¹ Michael Webb and David Ehrhardt, “Improving Water Services through Competition”, *Public Policy for the Private Sector*, The World Bank Group, December 1998, No 164, pp 3-4. For a similar view on the costs of co-ordination in common carriage water systems, see WRc and Ecologic, *Study on the Application of the Competition Rules to the Water Sector in the European Community*, Study Contract, No Comp/2002/E3?S12.334052 for the European Commission – Competition Directorate General, December 2002, p 48.

This second pair of examples illustrates that the collection function is not only potentially separable from the functions of transport and treatment, but that such separation occurs in practice and on commercial terms.

When combined, these two sets of examples illustrate that the functions of collection, transport and treatment of sewage are each separable one from another and under commercial arrangements which satisfy the requirements of health, environmental and other regulatory authorities.⁷²

148 The second set of examples that the Marsden Jacobs Report presents purport to show that collection is a separate market:

There are also close at hand examples of the separation of the functions of collection from the functions of transport and treatment;

In Auckland, WaterCare Services Limited (WSL) provides transportation and treatment for sewage collected by four Local Network Operatoers (LNOs). The LNOs are separately owned and operated from each other and from WaterCare. In the case of three LNOs, the operating entity is owned by the respective town or local government. In the fourth case, the LNO is a specialist private company operating under a long-term contract.

In Melbourne, the collection function is also legally and operationally separated from the functions of transport and treatment. In Melbourne, three separate retail water companies (Yarra Valley Water, South-East Water and City West Water) collect the sewage which is then transported and treated by Melbourne Water.⁷³

149 These examples are highly misleading. The facts are, of course, correct. However, the activities that are included within the function of collection in the examples are very different from the functions included under collection in the Application by Services Sydney. To repeat, the only activity that seems to be included under collection in the Application of Services Sydney is the billing for the removal of wastewater. By contrast, the collection activities in the examples offered in the Marsden Jacobs Report embrace:

⁷² Marsden Jacob Associates, *Potential to promote competition in sewerage markets*, Advice prepared by Marsden Jacob Associates for Services Sydney, 26 July 2004, p 7.

⁷³ Marsden Jacobs, *op. cit.*, p 7.

- a. water and wastewater;
- b. customer services; and
- c. small-pipe distribution networks.

It may well be that this collection of activities (if translated to the context of Sydney or some region within Sydney) would constitute a market. That would be consistent with the principles that we derived in Section 3 of this Report from our review of the empirical literature. However, this market is very different from the collection activity that Services Sydney refers to in its Application.

150 The use of the word ‘retail’ in the Application also leads the Marsden Jacobs Report into highly-misleading comparisons. As noted earlier in this Section, the Application seems to use the words ‘retail’ and ‘collection’ to refer merely to the activity of billing. However, the Marsden Jacobs Report states that the market boundaries proposed by Sydney Water have close parallels in those that have been developed in gas and electricity markets in the last two decades.

151 The Marsden Jacobs Report presents a table that is reproduced below as Table 2.

Electricity	Gas	Water	Sewerage
Generation	Supply/Treatment	Supply/Treatment	Treatment/Disposal
Transmission	Transmission	Transmission	Transportation/ Reticulation
Distribution/ Reticulation	Distribution/ Reticulation	Reticulation	
Retail	Retail	Retail	Retail collection

Table 2: Markets defined by Marsden Jacobs

Source: Marsden Jacobs Report p 8.

152 Two points should be noted. The first is that the Marsden Jacobs table separates water services from wastewater services with little or no attempt at justification.

The second point is that the word ‘retail’ is highly confusing. If words are to be used to characterise markets, they must describe economic activities.

153 The retailing activities in gas and electricity include billing. But the activity that makes (or breaks) an electricity or gas retailer⁷⁴ is what might more-appropriately be characterised as a wholesaling function. This is entering into (often long-term) contracts to buy large supplies of energy and the matching of this with the sum of a large number of demands by final purchasers. This retailing/wholesaling function essentially involves the activity of managing risks: the risks are caused principally because the demands for energy by final purchasers vary greatly from time to time.

154 The provision of water services to final purchasers requires that someone undertakes a somewhat similar wholesaling function in securing sufficient water to provide for the needs to final customers. The provision of wastewater services does not involve a similar function. So the retailing function that the Application seems to have in mind amounts only to billing.

155 The above reference to the management of risks should not be taken to mean that the activity of risk-management is unimportant in the provision of wastewater services. Indeed, it is a vital function for public health. The problem arises particularly in dealing with large fluctuations in flows of wastewater caused by heavy rainfalls. This is universally regarded as a major issue in the management of a wastewater system. It will be addressed in the following section under the heading of externalities.

5.5 EXTERNALITIES

156 An externality is said to exist when a person does not bear all the costs and gain all the benefits that accrue to society as a result of a resource-allocation decision made by that person. Externalities are a source of economic efficiency because they cause the person making the decision to decide in a way that, although it

⁷⁴ Many retailers combine both functions. Indeed, it might be argued that the retailing of gas and electricity lie within the same market in many circumstances.

may be efficient from the point of view of the decision-maker, is inefficient from the point of view of society as a whole.

157 Externalities can be overcome in three principal ways. In the first place they can be overcome by trade. As Ronald Coase showed in a famous paper, if transactions costs are zero, persons will trade so that externalities are ‘internalised’ and the decision-maker will take into account the full social costs and benefits of the resource-allocation decision.⁷⁵ Secondly, externalities can be internalised by an allocation of property rights so that all the costs and benefits of an action accrue to the decision maker. Finally, the inefficiencies caused by externalities can be overcome by means of regulation: there can be direct (or financial) controls so as to constrain decisions that may otherwise be inefficient from the point of view of society as a whole.

158 A wastewater system is subject to severe externalities in the form of wet weather flows. In wet weather, stormwater can enter the sewerage system via cracks in pipes, faulty joints or illegal roof water connections.

159 The intrusion of stormwater in wet weather can cause wastewater flows in the sewerage network to increase dramatically. Table 3 below indicates the average dry weather flow, the peak wet weather flow and the predicted wet overflow for the North Head, Bondi and Malabar Sewage treatment catchments.

⁷⁵ Ronald Coase, “The Problem of Social Cost”, *Journal of Law and Economics*, vol 3 (1960).

System	ADWF (ML/day)	PWWF (ML/day)	Overflow frequency (events/ten years)
North Head	350	1400	250
Bondi	150	700	150
Malabar	450	1300	250
Total	950	3400	650

Table 3: Effects of Wet Weather Flows

Source: Sydney Water

160 It is very expensive to design sewerage systems to cope with the flows that might occur in the most extreme wet weather events. As a result, most sewerage systems (both networks and treatment plants) are designed to accommodate wet weather flows up to a certain multiple of designed dry weather flows, or to predicted containment frequency, and to have flows in excess of these volumes overflow at designated overflow points.

161 Overflows from sewerage systems have the potential to impact both aquatic and ecosystems and also public health. Significant work was carried out during the 1990s to assess the environmental and public health impacts of wet weather overflows and to assess the costs and benefits of mitigative measures. These studies informed the basis of the development of the Waterplan 21 and the NSW Government's Waterways package, as well as the development of 27 Sewer Overflow Licensing Project (SOLP) Environment Impact Statements (EISs).

162 Since the preparation of the SOLP EISs, Sydney Water has spent in excess of \$900 million in addressing overflows from the sewerage system. Part of this expenditure has been incurred in addressing the rehabilitation in high leakage areas through the Interim Infiltration/Exfiltration Program carried out between 1997 and 2003. The Program showed the problem of house service lines. In

particular, without the rehabilitation of house service lines, the rehabilitation of Sydney Water reticulation lines will not achieve significant reductions in wet weather overflows.

163 A significant portion of the ingress of stormwater during wet weather comes from privately-owned house service lines. These house service lines are the legal responsibility of landowners. The Interim Infiltration/Exfiltration Program of Sydney Water carried out between 1997 and 2003 found that approximately 80 per cent of private house service lines were defective and the average cost per household of repairs is \$2500. Although the current legal responsibility for bearing these costs lies with landowners, it is presently borne by ratepayers in general.

164 The problem of wet weather flows is an striking example of a problem of system-wide externalities. The solution that has been adopted up until now is for a single system manager to assume responsibility. Under the allocation of activities proposed by the Application, it is not at all clear who is to be responsible for these system-wide externalities. What happens if the customers who contract with an entrant to dependent 'market' – as defined by the Application – are responsible for massive wet weather problems?

165 It is conceivable that these problems could be dealt with by contractual arrangements between businesses in the dependent 'market' and Sydney Water. However, the problems of verifying contractual provisions are likely to be very high. Although it is possible to install flow gauges in medium to large sewers to measure flows, there is no practical basis for measuring the individual wastewater generation by residential customers. This must include the volume of wet weather flow that enters the sewerage system via their private hose service line connections.

166 The conclusion must be that some one body has to be responsible for planning to cope with system-wide externalities. This either has to be a company or a regulator.

5.6 CONCLUSION ON THE MARKET'S PROPOSED BY THE APPLICATION

167 The market boundaries proposed by the Application are not supported by the empirical literature or by the experience of other jurisdictions in attempting to introduce more-competitive models into the delivery of water services. The claimed parallels in the organisation of electricity and gas are highly misleading.

168 The high cost of implementing a common carriage system (compared with its benefits) suggests that a much more-efficient way of securing competition in (a) water catchment or (b) treatment and disposal of wastewater is via contracting out of these services. As was outlined in Section 4.3 above, this contracting out should be subject to proper efficient component pricing. This would ensure that the market mechanisms would be used where it was efficient to use them.

6 Effects of declaration on competition and the public interest

6.1 EFFECT OF DECLARATION ON COMPETITION IN THE DEPENDENT MARKET

- 169 Any consideration of the effects of access (or increased access) on a dependent market must face the issue of market definition. This issue may be problematic in circumstances where many activities are located within one organisation; and the method of co-ordination among these activities is not by means of contract. One must then investigate the possibility of potential transactions. The guiding principle for identifying potential transactions is whether co-ordination by means of contract would be more efficient than co-ordination within an enterprise. This involves a comparison of transactions costs with agency costs.
- 170 There are two types of evidence available that bear on this issue. The first is that of empirical studies. The second is the experience of other jurisdictions in attempting to introduce more-competitive structures into the provision of water services. This evidence does support the proposition that there may well be a market for the treatment and disposal of sewage. But the evidence does not support the proposition that there is a retail sewage collection market or that there is a sewage transportation market.
- 171 The evidence that we have reviewed suggests strongly that the dependent market pleaded by Services Sydney in its Application for Declaration is not a market at all. The so-called sewerage collection market consists of a set of activities that would be inefficient to group together. A business undertaking such a set of activities could survive if it were supported by law and regulation; but it would be undertaking an inefficient bundle of activities.
- 172 This would seem to decide the issue for the Council. If the pleaded dependent market does not exist, then declaration cannot promote competition in the dependent market.

173 However, this argument concerning market boundaries has implications for the meaning of ‘competition’ within the context of an antitrust statute. Any proper notion of competition must, within the context of an antitrust statute, be associated with economic efficiency. This was recognised by the High Court, within the context of s46, in *Queensland Wire Industries*:

But the object of sec. 46 is to protect the interests of consumers, the operation of the section being predicated on the assumption that competition is a means to that end. Competition by its very nature is deliberate and ruthless. Competitors jockey for sales, the more effective competitors injuring the less effective by taking sales away. Competitors almost always try to ‘injure’ each other in this way. This competition has never been a tort ... and these injuries are the inevitable consequence of the competition sec. 46 is designed to foster.⁷⁶

174 The link between competition and efficiency has been prominent in academic discussions of the meaning of competition within the context of antitrust. In particular, commentators have been critical of courts in merger cases, when courts have (on occasion) condemned mergers for lessening competition because the mergers will provide access to efficiencies which would enable the merged entity better to compete. This has led commentators (and, indeed, courts) to refer to competition on the merits.

175 One of the most notorious examples of such action by the courts was the decision by the United States Supreme Court in *Procter & Gamble*. The case has become famous, principally because it was widely regarded as a mistake by the Supreme Court. For example, Areeda and Turner were critical of the decision for being concerned that it might create a more-powerful competitor by having access to efficiencies of product marketing and promotion. They argued that condemning mergers for generating resource savings was contrary to the proper purposes of antitrust policy.⁷⁷

⁷⁶ *Queensland Wire Industries Pty Ltd v The Broken Hill Proprietary Company Limited & Anor* (1989) ATPR 40-925, per Mason CJ and Wilson J, p 50,010.

⁷⁷ Phillip E Areeda and Donald F Turner (1980), *Antitrust Law*, Little, Brown and Co. 1103c at 9.

176 A proper interpretation of ‘promotion of competition’ must have in mind competition on the merits. That is, the competition that is being considered cannot be an artificial form of rivalry that can only be sustained because of the support of a system of law and regulation. The competition must be the type of competition that will promote the long-term interests of consumers – just as the High Court that was the kind of competition that s 46 was designed to foster.

177 This proper consideration of the notion of competition within the context of an antitrust statute is consistent with the consideration of the definition of markets in this Report. The consequence of adopting an efficiency standard for defining markets in terms of potential transactions is that criterion (a) will be confined to consideration of competition in the sense of competition that enhances the long-term interests of consumers. Competition should not be encouraged if the competition is an artificial outcome of Part IIIA; it must be competition of the kind that promotes economic efficiency.

6.2 EFFECT OF DECLARATION ON THE PUBLIC INTEREST

178 The approach adopted in this Report to market definition is also consistent with consideration of criterion (f): ‘that access (or increased access) to the service would not be contrary to the public interest’. Access to the services nominated in the Application would only be required for an enterprise that wished to undertake the set of activities that is contemplated by Services Sydney in its Application.

179 The effect of declaration would be contrary to the public interest because economic efficiency is an important element in consideration of the public interest. As the Tribunal stated in *QCM4*:

This [public benefit] we see as anything of value to the community generally, any contribution to the aims pursued by the society including as one of its principal

elements (in the context of trade practices legislation) the achievement of the economic goals of efficiency and progress.⁷⁸

180 The evidence surveyed in this Report suggests that it would be inefficient to promote the division of activities of Sydney Water in the manner contemplated in the Application. The only purpose of issuing a declaration would be to promote this particular division of activities. It follows that declaration would be contrary to the public interest.

⁷⁸ *Re QCMA and Defiance Holdings* (1976) ATPR 40-012, p 17,242.

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