CASE NO. 1046/2/4/04: ALBION WATER LIMITED V WATER SERVICES REGULATION AUTHORITY (FORMERLY THE DIRECTOR GENERAL OF WATER SERVICES) (DŴR CYMRU/SHOTTON PAPER)

THE WATER SERVICES REGULATION AUTHORITY

FINAL REPORT TO THE COMPETITION APPEAL TRIBUNAL

PURSUANT TO RULE 19(2)(J) OF THE COMPETITION APPEAL TRIBUNAL'S RULES FOLLOWING THE JUDGMENT OF THE COMPETITION APPEAL TRIBUNAL DATED 18 DECEMBER 2006

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PART I: INTRODUCTION, BACKGROUND AND RELEVANT LAW

1. EXECUTIVE SUMMARY

Introduction

1.1 This is a report ("the Final Report") of the results of the Water Services Regulation Authority's ("the Authority") investigations pursuant to a referral by the Competition Appeal Tribunal ("the Tribunal") under Rule 19(2)(j) of the Tribunal's Rules (the "Referred Work"). The Tribunal made the referral in its judgment of 18 December 2006 [2006] CAT 36 ("the Further Judgment") in Case No 1046/2/4/04. It follows a draft report ("the Draft Assessment") issued to the parties on 3 May 2007 for their observations.

1.2 Pursuant to the referral, the Authority has investigated:

1.2.1 the matter of the calculation of the costs reasonably attributable to the service of the transportation and partial treatment of water by Dŵr Cymru Cyfyngedig ("Dŵr Cymru"), generally and through the Ashgrove system in particular ("the First Issue");

1.2.2 the associated question of whether, in the light of those costs, the First Access Price ("FAP") was an unfair price within the meaning of the Chapter II prohibition ("the Second Issue").

1.3 The law on excessive and unfair pricing is notoriously complex. In the recent case of *Attheraces*[1] before the Court of Appeal, Mummery LJ observed at paragraph 4:

> *"The proceedings presented the trial judge (Etherton J) and this court with a range of factual and legal problems of a kind which even specialist lawyers and economists regard as very difficult. This is the view of Professor Richard Whish in Competition Law (5th ed - 2003): "[T]he law on abusive pricing practices is complex and controversial" (page 685) and "[I]n practice it is immensely complex to determine what is the appropriate price for access to an essential facility" (page 693)".*

1.4 The Authority has carried out the investigation (including its fact-finding and verification) in line with the timetable imposed by the Tribunal.

1.5 In the Draft Assessment issued to the parties on 3 May 2007, the Authority presented the parties with the Authority's thinking at that point in the investigation, based on the work which it had been able

[1] *(1) Attheraces Limited (2) Attheraces (UK) Limited v (1) The British Horseracing Board Limited (2) BHB Enterprises PLC* [2007] EWCA Civ 38.

to undertake in the time available to that date. While the parties considered this report, work continued and the parties were updated on all significant developments. In particular, the engineering assumptions underpinning the cost calculations for the First Issue were objectively assessed by independent engineers, who undertook a visual inspection of the Ashgrove system. Their findings, and other relevant developments, were notified to the parties as soon as the information became available.

1.6 Throughout the course of its investigation into the Referred Work, the Authority has had regard to the need for the parties to have an adequate opportunity to respond to its preliminary conclusions before the Final Report was submitted to the Tribunal. Three weeks were set aside for the parties to consider the Draft Assessment and make written and oral representations, including at a tri-partite meeting held on 18 May 2007. The parties have also been given a full opportunity to comment (in writing and in an earlier tri-partite meeting held on 20 February 2007) on each other's evidence, and the information requests from, and other material provided by, the Authority throughout the investigation. The Authority has also attempted where possible to take into account any significant points in the submissions of the parties made just before the deadline for presenting the Final Report to the Tribunal.

1.7 It is important to note that the Final Report focuses on the question of whether the FAP was excessive, and unfair, by reference to the information available, and the circumstances prevailing, at the time at which the FAP was offered. It does not necessarily reflect the Authority's current policies, nor how the Authority might approach the question of whether a price for common carriage offered in 2007 was excessive and unfair. This is thus a consideration of a historic cost and is not a reflection of, or constraint on, the Authority's current or future policies on common carriage access pricing.

Summary of results on the First Issue

1.8 For its work on the First Issue, the Authority has compared the FAP with the costs of the services which would be provided by Dŵr Cymru to Albion Water Limited ("Albion") under a common carriage agreement. The services to be covered by the FAP have had to be specified by the Authority because the parties have been unable to reach agreement on this issue.

1.9 The identification of the relevant services has been a matter of particular dispute between the parties. The Authority's conclusion is that the following services were included in the FAP:

- Transport of Albion's water via the raw water aqueduct from Heronbridge to the Ashgrove Water Treatment Works ("Ashgrove WTW").

- Partial water treatment of Albion's water at the Ashgrove WTW.

- Disposal of the sludge created by partially treating Albion's water via a sludge main to the Chester Sewerage Treatment Works ("Chester STW").

- Transport of Albion's water via Dŵr Cymru's non-potable bulk distribution main from the Ashgrove WTW to the Shotton Paper site.

- Water system management of the Ashgrove system via water storage in the Corus lagoons.

- Operational control of the Ashgrove system.

- A back-up supply for Albion's non-potable water supply to Shotton.

- Common carriage services (operational and customer services including a system for "unders and overs" and Albion-specific customer services).

1.10 The Authority has not included other services such as negotiation costs and connection costs.

1.11 As for calculating the costs of those services, there is no single, exclusively correct figure resulting from any single, exclusively correct methodology, given the large number of assumptions necessarily entailed. The Authority has used three alternative methodologies to calculate the costs: an average accounting costs plus ("AAC-plus") approach; a long-run incremental cost ("LRIC") approach; and a local accounting costs ("LAC") approach – more accurately described as a local hybrid costs approach. All three of these methodologies are more locally-cost based than the form of AAC methodology Dŵr Cymru used to calculate the FAP. The Authority's preferred methodology is the AAC-plus methodology which is the closest to that used in a regulatory context in 2000/01. The Authority has used LRIC and LAC as cross-checks on this methodology.

1.12 In calculating the costs reasonably attributable to the FAP, the Authority has borne in mind the need to use assumptions which would have been reasonable to use on the basis of the information which would have been available, and the conditions which were prevailing, at the time at which the FAP was provided. The

Authority has therefore also considered what forward-looking assumptions it would have been reasonable to make at the time that the FAP was provided (rather than necessarily using information which shows what happened in practice after the FAP was provided).

1.13 On the basis of the considerations above, the Authority has used an estimate of the disaggregated cost of capital of 11.1% in the LAC and LRIC models and 8.0% in the AAC-plus model in the Final Report. More explanation is given in Section 6B1.

1.14 On the basis of the three methodologies the Authority has calculated the costs reasonably attributable to the relevant services covered by the FAP to be as follows[2]:

Results of the AAC-plus methodology

AAC-plus	
Raw Water Aqueduct	1.2
Water Treatment (including sludge management)	5.3
Bulk Non-potable Distribution	2.3
Water Storage	1.0
Operational Control	0.3
Management, General and Support Expenditure	2.1
Business Activities	2.4
Back-up Supply	4.4
Common Carriage Services	0.3
Total	19.3

Results of the LRIC methodology

LRIC, 20% increment	
Raw Water Aqueduct	0.0
Water Treatment	7.4
Sludge management	1.9
Bulk Non-potable Distribution	9.9
Water Storage	0.0
Operational Control	0.8
Management, General and Support Expenditure	n/a
Business Activities	n/a
Back-up Supply	n/a
Common Carriage Services	n/a
Total	20.0

[2] Please note that not all the cost categories are the same for each methodology.

Results of the LAC methodology

LAC	
Raw Water Aqueduct	0.1
Water Treatment	3.0
Sludge management	1.4
Bulk Non-potable Distribution	2.5
Water Storage	1.3
Operational Control	1.1
Management, General and Support Expenditure	2.8
Business Activities	1.4
Back-up Supply	4.4
Common Carriage Services	0.3
Total	18.5

Notes:
The LAC numbers do not add up exactly due to rounding.

1.15 A graph of the LRIC results for other increments is provided at the end of Section 7.

Summary of views on the Second Issue

1.16 For its work on the Second Issue, the Authority has considered the issues that need to be taken into account when deciding whether the FAP is unfair within the meaning of the Chapter II prohibition. In accordance with the two limbs of the test in *United Brands*[3], the Authority has looked first at whether the FAP is excessive. The Authority has then gone on to consider whether the FAP is unfair by reference to comparators or unfair in itself.

1.17 As to the first limb, the Authority has taken into account the extent to which the FAP exceeds the costs reasonably attributable to the relevant services, as calculated by each of the three methodologies. The results are as follows:

[3] Case 27/76 *United Brands v Commission of the European Communities* [1978] ECR 207.

	Result of methodology	FAP	Percentage by which FAP is above the result of the methodology	Monetary value per year
AAC-plus	19.3	23.2	20%	£252,000
LRIC	20.0	23.2	16%	£207,000
LAC	18.5	23.2	25%	£304,000

1.18 Based on those figures, the Authority has concluded that the FAP is excessive since it exceeds the costs attributable to the relevant services by a material extent. In the circumstances of this case, the monetary impact of these percentages would range from £207,000 to £304,000 per annum.

1.19 In accordance with the *United Brands* test, since the answer to the first limb is affirmative, the Authority has gone on to consider whether the FAP is unfair by reference to comparators or in itself.

1.20 As to the FAP being unfair by reference to comparators, the Authority's view is that the large number of material differences between the FAP and available comparators make it difficult for meaningful comparisons to be made with individual prices charged for the supply of water (whether potable or non-potable) by Dŵr Cymru or others.

1.21 As to the FAP being unfair in itself, there is very little guidance in relevant case law on what is meant by the concept of a price being "unfair in itself". The Authority adopts the observations of the European Commission ("the Commission") at 217 to 218 of its decision in *Scandlines*[4]:

> "*217. The case law of the Court of First Instance and the [ECJ] as well as the decisional practice of the Commission provides little guidance on how to determine whether a price must be considered unfair in itself.*
>
> *218. While the ECJ in United Brands stated that 'charging a price which is excessive because it has no reasonable relation to the economic value of the product supplied would be such an abuse, it provided no further details on how to determine this 'economic value' of the product/service provided*".

1.22 The Authority has had regard to the judgment of the Court of Appeal in *Attheraces* and the Commission's decision in *Scandlines* and the need to consider whether there are relevant non-cost

[4] Case COMP/A.36.568/D3 *Scandlines Sverige AB v Port of Helsingborg*, Commission decision of 23 July 2004.

related factors or "*externalities*" when assessing the "*economic value*" of the relevant services. The Authority has considered various non-cost related factors and has concluded that there are no relevant externalities in this case. As such, the Authority's view is that the costs reasonably attributable to the relevant services represent the "*economic value*" of those services in this particular case, in accordance with the implicit approach of the Commission in its decision in *Deutsche Post*[5].

1.23 In the absence of any other relevant considerations, the Authority has considered whether the extent by which the FAP exceeds the costs reasonably attributable to the services establishes that the FAP bears no reasonable relation to the economic value of those services. As set out in the table above, on the basis of the Authority's calculations, the FAP exceeds the costs of providing the relevant services by between 16% and 25%.

1.24 The Authority notes that on the particular facts of the case in *Deutsche Post* a price was held to be unfair when calculated to be not less than 25% above the cost of providing the service in question. However, the Authority also notes that neither the case law of the European Court of Justice ("ECJ") nor the decisional practice of the Commission purports to indicate any quantitative threshold, akin to, for example, a *de limitis* threshold, above which an excess over costs is unfair in itself. The Authority considers that no single quantitative threshold would be appropriate, given the range of circumstances which could pertain to any case and the large margin of appreciation inherent in the concept of unfair pricing.

1.25 The Authority has had regard to the Tribunal's observation at paragraph 310 of the Main Judgment on 6 October 2006 [2006] CAT 23 ("the Main Judgment") that the Second Issue involves a considerable margin of appreciation:

> *"Whether a given price bears "no reasonable relation" to its "economic value" is a matter of fact and degree, which in our judgment involves a considerable margin of appreciation, not least because the notion of the "economic value" and whether the price has a "reasonable" relation to that value are matters of judgment. It is particularly a matter of fact and degree to decide how far above "the economic value" a price has to be before it can be said to bear "no reasonable relation" to that economic value*".

1.26 The Authority considers that an excess of 25% could indicate that the FAP is unfair in itself. However, an excess of 25% is the highest of the results produced under the three calculations used by the Authority. The Authority notes that on the main AAC-plus

[5] *AG – Interception of cross-border mail* OJ 2001 L331/40 (comparison of domestic and international tariffs where costs difficult to ascertain).

methodology, the excess is 20% and that on the cross-check which produces the highest figure, namely LRIC, the excess is lower at 16%.

1.27 The burden of proving that the FAP bears no reasonable relation to the economic value of the services provided is on the regulatory decision maker[6]. Any doubt must benefit Dŵr Cymru, as the alleged infringer. In *Scandlines*, the Commission stated that "*the burden of proof is on the Commission to demonstrate, based on cogent evidence, the existence of such an abuse*".

1.28 The Authority does not consider that an excess of 20%, as calculated under the main AAC-plus methodology, is indubitably unfair in itself, in the circumstances of this case, and having regard to the fact that on one cross-check methodology the excess is 16%. At the time of quoting the FAP, there was, (and in fact there still remains), considerable uncertainty over the scope of the services to be provided by Dŵr Cymru for which the FAP was the consideration. The Authority has reviewed the contemporaneous evidence and sets out in Section 5 its assumptions underpinning the analysis of the FAP which are based on the view of the Authority as to the services that were required by Albion from Dŵr Cymru in this case, but notes that this is a retrospective assumption and there is little clarity on this issue.

1.29 Arguably the uncertainty regarding the scope of the services to be provided has been resolved to some extent in Dŵr Cymru's favour by *including* in the costs calculations of the FAP a large proportion of the disputed services[7], including the cost of a back-up supply (although the costs of these services have not necessarily been attributed to the full extent Dŵr Cymru's suggested). However, not all services have been included and uncertainty (and disagreement between the parties) on this issue remains. This is consistent with Dŵr Cymru's view that the FAP was indicative. The Authority has also borne in mind the fact that negotiations over the common carriage arrangement had not been completed by the time of the FAP, the complexity of the costs allocation, the inherent uncertainty of many of the assumptions involved and the lack of any benchmark for a reasonable profit margin in these circumstances.

1.30 In the light of these factors, the Authority does not consider that there is cogent evidence in the circumstances of this case that the excess is on the balance of probabilities unfair in itself. The Authority accordingly concludes that there is insufficient evidence that the FAP bears no reasonable relation to the economic value of the service provided and so makes no finding that the FAP is unfair within the meaning of the test established in *United Brands.*

[6] That is to say that before the Authority (or as the case may be, the Tribunal) could reach such a conclusion, the burden of proving the FAP bears no reasonable relation to the economic value of the services provided would lie with that body.
[7] The dispute being one between the parties as to whether the costs of those services should be included in the FAP and what the costs of those services are should they be included in the FAP.

Future policy

1.31 The Authority is currently in the process of reviewing competition in the water industry. The Referred Work relates to a case about a common carriage price offered in 2001. The Authority does not consider that the statements and assumptions made in this Final Report bind the Authority's future policy on competition in the water industry.

2. BACKGROUND TO THE REFERRED WORK

2.1 This Final Report contains results of the Authority's investigations pursuant to the Referred Work.

2.2 The Further Judgment followed an Interim Judgment on 22 December 2005 [2005] CAT 40 ("the Interim Judgment") and the Main Judgment. It was followed by a later judgment refusing Dŵr Cymru permission to appeal to the Court of Appeal ("the Refusal Judgment") The four judgments concern the appeal by Albion against decision CA98/01/2004 dated 26 May 2004 ("the Decision") of the Director General of Water Services, now the Authority[8] adopted under the Competition Act 1998 ("the 1998 Act"). The Decision was to the effect that the price of 23.2p/m^3 (the "FAP") offered by Dŵr Cymru to Albion on 2 March 2001 for the "common carriage" of non-potable water across what is known as the Ashgrove system, did not constitute an abuse of a dominant position contrary to the Chapter II prohibition imposed by section 18 of the 1998 Act.

2.3 At paragraph 981 of the Main Judgment, the Tribunal summarised its conclusions as follows:

> "*(1) There is evidence before the Tribunal that the treatment cost of non-potable water on an average accounting cost basis was over-estimated in the Decision. However the Tribunal is prepared to assume, without deciding, that treatment costs are in the range 1.6p/m³ to 3.2p/m³.*
>
> *(2) The matter of the "distribution" cost of non-potable water on an average accounting cost basis was not sufficiently investigated. In this respect the Decision is incorrect, or at least insufficient, from the point of view of the reasons given, the facts and analysis relied on, and the investigation undertaken, as regards in particular to the Director's conclusion in paragraph 302 of the Decision to the effect that it was not unreasonable to assume that the "distribution" costs of potable and non-potable water are the same.*
>
> *(3) The evidence strongly suggests that the [FAP] was excessive in relation to the economic value of the services to be supplied, by reason of the absence of any convincing justification for the "distribution" costs included in the average accounting cost calculation.*

[8] Responsibility for decisions under the 1998 Act was transferred from the Director General of Water Services to the Water Services Regulation Authority on 1 April 2006 pursuant to provisions of the Water Act 2003.

(4) *The cross-check as to the validity of the [FAP] by reference to ECPR in paragraphs 317 to 331 of the Decision cannot be safely relied on because (i) the 'retail' price used in the calculation is not shown to be cost-related, as regards the distribution element; (ii) the evidence strongly suggests that that price was itself excessive; (iii) the particular method of ECPR used in this case would eliminate existing competition and, in effect, preclude virtually any competitive entry, because the margins are insufficient; and (iv) the approach of the Authority in its evidence and submissions was not the same as that in the Decision. None of the justifications for an ECPR approach advanced by the Authority persuaded us that we could safely rely on the approach set out in the Decision in the circumstances of the present case.*

(5) *As regards the allegation of margin squeeze, the existence of a margin squeeze was not seriously disputed. The Director's finding at paragraph 352 of the Decision that nonetheless there was no breach of the Chapter II prohibition was erroneous in law and incorrect, or at least insufficient, from the point of view of the reasons given, the facts and analysis relied on and the investigation undertaken.*

(6) *It is unsafe to assume, as the Director does in paragraphs 331 and 338 of the Decision, that the Costs Principle set out in section 66E of the WIA91 supports the conclusion which the Director reached in the Decision, since (i) the retail price used in the calculation in the Decision is not shown to have been reasonably cost-based, and the evidence strongly suggests that that price was itself excessive; and (ii) the Director's interpretation of ARROW costs under section 66E(4) is open to serious question, since that interpretation would on the evidence preclude virtually any effective competition or market entry, and give rise to a potential conflict with the consumer objective under that Act and with the Chapter II prohibition*."

2.4 As indicated at paragraphs 982 to 983 of the Main Judgment, there were essentially three matters left to decide: (1) the issues arising in relation to dominant position; (2) the issues arising in relation to the remedies or orders that the Tribunal should grant or make in the light of the Main Judgment on the issue of abuse; and (3) the question of interim relief.

2.5 In the Further Judgment, the Tribunal summarised its decision on those three matters at paragraph 360 as follows:

"*For the reasons given above the Tribunal unanimously:*

(i) sets aside paragraphs 93 (first sentence), 97 to 99, 131, 132, 138, 144, 150, 160 to 165, 176 to 177, 182 to 187, 189 to 191, 199 to 203, 209, 211, 213 to 215, 216 to 225, 300 to 302, 317 to 331, 338 to 341, 345 to 352, 360 to 361, 371, and Annex I of the Decision.

(ii) confirms as correct the Director's assumption as to dominant position at paragraphs 212 and 215, last sentence, of the Decision, and finds on the facts that Dŵr Cymru had at all material times a dominant position on the relevant market within the meaning of the Chapter II prohibition.

(iii) refers back to the Authority under Rule 19(2)(j) of the Tribunal's Rules for further investigation the matter of the costs reasonably attributable to the service of the transportation and partial treatment of water by Dŵr Cymru, generally and through the Ashgrove system in particular, together with the associated question of whether, in the light of those costs, the [FAP] was an unfair price within the meaning of the Chapter II prohibition.

(iv) declares that by quoting the [FAP] of 23.2p/m³, at the same time as offering a retail price of some 26p/m³, Dŵr Cymru imposed on Albion a margin squeeze which constituted an abuse of a dominant position within the meaning of the Chapter II prohibition.

(v) continues until further order the Tribunal's interim order of 20 November 2006 reducing Dŵr Cymru's existing Bulk Supply Price to Albion by 3.55p/m³.

2.6 The precise terms of the Referred Work are set out at paragraphs 279 to 281 of the Further Judgment:

"*279.On the issue of abuse of excessive pricing, the Tribunal considers that there would be strong grounds for making a finding of abuse. Nonetheless, for the reasons already given the Tribunal considers it preferable that certain matters should, first, be further investigated by the Authority, notably to determine the extent to which the [FAP] was unrelated to costs, and to consider whether that price was unfair within the meaning of section 18(2)(a) of the 1998 Act.*

280. The Tribunal therefore refers back to the Authority under Rule 19(2)(j) of the Tribunal's Rules for further investigation the matter of the calculation of the costs reasonably attributable to the service of the transportation and partial treatment of water by Dŵr Cymru, generally and through the Ashgrove system in particular, together with the associated question of whether, in the light of those costs, the [FAP] was an unfair price within the meaning of the Chapter II prohibition.

"281. In investigating those matters the Authority shall give Dŵr Cymru and Albion a full opportunity to comment on the Authority's preliminary views before reaching any conclusions. There is no reason why that investigation should not proceed in parallel with the determination of the Bulk Supply Price where similar issues are likely to arise. The Authority is requested to report the results of its investigations to the Tribunal within six months of the date of this judgment, subject to any further direction of the Tribunal. The Tribunal will then determine the matter under paragraph 3(2)(e) of Schedule 8 of the 1998 Act".

2.7 Accordingly, the Authority has carried out an investigation of two issues:

2.7.1 First, the Authority has calculated the costs reasonably attributable to the service of the transportation and partial treatment of water by Dŵr Cymru, generally and through the Ashgrove system in particular, in order to determine the excess (if any) between those costs and the price actually charged. The three methodologies used for calculating the costs are set out in Section 6 below;

2.7.2 Secondly, the Authority has investigated whether, in the light of any excess between the costs reasonably attributable to that service and the price actually charged, the FAP was an "unfair price" within the meaning of the Chapter II prohibition. In doing so, it has considered whether the FAP was unfair either in itself or when compared to other services.

2.8 This approach is in accordance with the two-stage test for unfair pricing under Article 82 of the EC Treaty. A summary of the legal framework for determining unfair pricing is set out in Section 4 below.

2.9 The Authority's investigation does not extend to any aspects of the issues of dominance or margin squeeze, which are the subject of the Tribunal's findings in its Main and Further Judgments. By a Notice of Appeal dated 18 February 2007 and amended on 12 March 2007, Dŵr Cymru has appealed against the Main and Further Judgments in relation to the Tribunal's determination of the margin squeeze issue and the Tribunal's jurisdiction to determine the dominance issue and those proceedings are still ongoing. Dŵr Cymru is not appealing the issue of excessive pricing on the basis that that issue has not yet been decided.

2.10 By a letter dated 9 February 2007, Dŵr Cymru requested that the Authority determine the terms for the bulk supplies of potable and non-potable water by Dŵr Cymru to Albion Water to supply the Shotton Paper site ("the Bulk Supply Price") under its powers under section 40 of the Water Industry Act 1991 ("WIA 1991"), on the

ground that there was no prospect of any agreement between the parties. The Authority's preliminary view is that any such determination would be under the Authority's powers in section 40A WIA91 as Dŵr Cymru applied for the determination. According to information sent to the Authority by Albion and Dŵr Cymru, negotiations are currently taking place between the parties on the new terms of the bulk supply (at the time of the Final Report). The Authority therefore currently considers (at the time of the Final Report) that Dŵr Cymru's request for a determination of the Bulk Supply Price does not meet the test in section 40A (1) (b) WIA91 because it is not "*satisfied that that [agreement] cannot be achieved by agreement between the parties to the agreement*." The Authority is monitoring the progress of the negotiations in order to assess whether it would be appropriate to make a determination if asked to do so by the either of the parties. Any determination by the Authority of the Bulk Supply Price does not fall within the terms of the Tribunal's referral under the Referred Work, did not form part of the Authority's investigation and is not a subject of the Final Report. The price of the bulk supply has never been the subject of an investigation under the 1998 Act.

3. BACKGROUND TO THE CASE

3.1 An explanation of the factual background to the dispute between Albion and Dŵr Cymru, and to Albion's complaint on 8 March 2001 to the Director under the 1998 Act ("the Complaint") is set out at paragraphs 66 to 134 of the Main Judgment. For ease of reference, this section sets out a brief summary of the relevant background set out in the Main Judgment.

The parties

3.2 Albion was granted by the Director an "inset appointment" pursuant to section 7(5), as amended, of the WIA 1991 on 1 May 1999. That appointment entitles Albion to supply water within the area referred to in the appointment. In Albion's case, the area in question covers, in effect, the premises of Shotton Paper in North Wales. Dŵr Cymru is a statutory undertaker providing water and sewerage services in Wales and some adjoining areas of England. United Utilities Water plc ("United Utilities") is a statutory undertaker providing water and sewerage services to customers in North-West England.

The infrastructure

3.3 Pursuant to Heads of Agreement dated 10 May 1994, Dŵr Cymru purchases a "bulk supply" of water from United Utilities, for onward sale to Dŵr Cymru customers via the Ashgrove system. This agreement is referred to in the Decision as the "First Bulk Supply Agreement", or as the "FBSA" in this Final Report.

3.4 Physically, this means in brief, that the water is abstracted from the River Dee at Heronbridge, and then pumped to the Ashgrove WTW. From there, the water descends by gravity through the Ashgrove pipeline which covers a distance of some 15 kilometres as the crow flies.

3.5 When originally constructed, the Ashgrove pipeline supplied non-potable water to a WTW at Sealand, which is on what is now the Shotton Paper site. At Sealand, the water was treated to a potable standard for onward supply to consumers. At the same time the Ashgrove pipeline also supplied non-potable water to the neighbouring steelworks owned by British Steel, Corus Colours Limited's ("Corus") predecessor, and to a third customer no longer in business.

3.6 Shotton Paper sought a non-potable water supply from North West Water in 1984. Around the same time, North West Water decided that it no longer needed to supply potable water from the Sealand treatment works, so the Sealand plant was decommissioned and

the site sold to Shotton Paper. Since the late 1980s the Ashgrove system has been used to supply non-potable water to Shotton Paper and to Corus.

3.7 The Ashgrove system (but not the Heronbridge pumping station) was transferred from North West Water to the Welsh Water Authority, Dŵr Cymru's predecessor, in about 1986, shortly prior to privatisation.

The situation at the time of the Complaint (and which currently subsists)

3.8 The water put into the Ashgrove system is abstracted from the River Dee by United Utilities at the Heronbridge pumping station. At a water meter a short distance from the pumping station, the water passes into the Dŵr Cymru supply area, from where it is pumped a short way to the Ashgrove WTW. The price paid by Dŵr Cymru to United Utilities is governed by the FBSA.

3.9 At the Ashgrove WTW, aluminium sulphate is added to the water, which then passes through sedimentation tanks called clarifiers. The various solids and particulates in the water react with the aluminium sulphate and coagulate to form a "sludge blanket" within each clarifier. This blanket effectively acts as a filter. As the water passes through each sludge blanket, the solids and particulates are progressively filtered out into the sludge, which is periodically removed.

3.10 The operation of the flow through the Ashgrove pipeline is maintained and controlled telemetrically 24 hours a day through Dŵr Cymru's control room at Bretton[9]. Shortly before the Ashgrove pipeline reaches the Sealand site, it divides at a ROTORK valve which controls the supply to Shotton Paper and Corus respectively. Shotton Paper's demand varies in accordance with the needs of its production process. When Shotton Paper's demand is lower, Dŵr Cymru uses the ROTORK valve, controlled telemetrically from Bretton, to divert more water into storage lagoons, owned by Corus. The Corus lagoons thus perform a flow-balancing function.

3.11 At the time of the Complaint, as at present, Albion purchased the water in question under the Second Bulk Supply Agreement (the "SBSA") from Dŵr Cymru (which has in turn purchased the water from United Utilities) at the boundary of Albion's inset appointment area at the premises of Shotton Paper. The meter is situated at the disused Sealand treatment works.

[9] The WTW at Bretton also supplies potable water to Albion, for onward supply to Shotton Paper. This supply is via a separate system. Under its inset appointment, Albion is the supplier to Shotton of both potable and non-potable water, but the issue in this case relates only to non-potable water.

The common carriage proposal

3.12 Under Albion's common carriage proposal, in broad terms, Albion would acquire water directly from United Utilities at Heronbridge, and then resell the water to Shotton Paper, paying a common carriage charge to Dŵr Cymru for the transport of the water to Shotton Paper via the Ashgrove system. In this sense, it would replace Dŵr Cymru as the intermediate supplier between United Utilities and Shotton Paper. However, during the course of the Referred Work, what Albion's common carriage proposal consisted of was a matter of particular dispute between the parties and its exact details were not clear from the contemporaneous documents

3.13 Albion first asked Dŵr Cymru formally for a common carriage price on 28 September 2000. In a letter dated 20 October 2000, Enviro-Logic (Albion's then parent company) on behalf of Albion indicated that it considered 7p/m³ to be a fair cost-reflective price for common carriage through the Ashgrove system (a common carriage price excludes the price of water resources, which must be supplied or purchased separately).

3.14 On 16 January 2001, Dŵr Cymru provided Albion with an indicative "access" – i.e. common carriage – price to cover the partial treatment and transport of water through the Ashgrove system of around 20p/m³. Enviro-Logic sent an e-mail to the Director on 18 January 2001 indicating that this price was unacceptable to them.

3.15 In a letter dated 20 February 2001, Dŵr Cymru informed the Director that it was minded to charge Albion an access price of 23.2p/m³ for the common carriage services requested, for the year 2000/2001. This is the price referred to in the Decision and the judgments as the FAP. Albion was notified of this price on 2 March 2001. Albion considered that this price was also unacceptable. On 8 March 2001 Albion complained to the Director that the FAP constituted an infringement of the Chapter II prohibition ("the Complaint").

The relevant services for the purposes of the investigation

3.16 The Decision on the Complaint considered whether the FAP constituted an infringement of the Chapter II prohibition by reference to the services encompassed by Albion's request for a common carriage access price on 28 September 2000. The Authority's investigation has proceeded on the same basis, namely by considering the costs reasonably attributable to the service of the transportation and partial treatment of water by Dŵr Cymru as requested by Albion on 28 September 2000.

4. THE LAW ON EXCESSIVE/UNFAIR PRICING AND THE PRINCIPLES TO BE APPLIED

4.1 The stages of the Referred Work mirror the test for determining whether a supply price is an unfair price under Article 82 of the EC Treaty/section 18(1) of the 1998 Act.

4.2 Section 18(1) of the 1998 Act prohibits *"[A]ny conduct on the part of one or more undertakings which amounts to an abuse of a dominant position in a market … if it may affect trade within the United Kingdom". Section 18(2)(a) of the 1998 Act gives, as an example of an abuse, "directly or indirectly imposing unfair selling prices".*

4.3 To determine whether a price is excessive, the starting point is *United Brands* where the ECJ set out the following test at paragraphs 248 to 253:

> "*248 The imposition by an undertaking in a dominant position directly or indirectly of unfair purchase or selling prices is an abuse to which exception can be taken under Article [82] of the Treaty.*
>
> *249 It is advisable therefore to ascertain whether the dominant undertaking has made use of the opportunities arising out of its dominant position in such a way as to reap trading benefits which it would not have reaped if there had been normal and sufficiently effective competition.*
>
> *250 In this case charging a price which is excessive because it has no reasonable relation to the economic value of the product supplied would be such an abuse.*
>
> *251 This excess could, inter alia, be determined objectively if it were possible for it to be calculated by making a comparison between the selling price of the product in question and its cost of production, which would disclose the amount of the profit margin; however the Commission has not done this since it has not analysed UBC's costs structure.*
>
> *252 The questions therefore to be determined are whether the difference between the costs actually incurred and the price actually charged is excessive, and, if the answer to this question is in the affirmative, whether a price has been imposed which is either unfair in itself or when compared to competing products.*
>
> *253 Other ways may be devised – and economic theorists have not failed to think up several – of selecting the rules for determining whether the price of a product is unfair*".

4.4 The First Issue in this investigation, namely calculating the costs of providing the relevant services, reflects paragraph 251 of *United Brands*. The Second Issue, investigating whether the FAP is unfair, in this investigation mirrors paragraph 252 of *United Brands*. The Second Issue accordingly comprises two limbs: first, the Authority must consider whether the FAP is excessive; if the answer to that is affirmative, the Authority must then go on to consider whether the FAP is unfair in itself or by reference to comparators.

4.5 The Court of Appeal has given the following guidance on that passage from *United Brands* at paragraphs 115 to 119 of its judgment in *Attheraces*:

> "*115. Although it would be wrong to read this passage too literally, it must, in our judgment, be read and applied with care. We make the following points.*
>
> *116. First, the judgment in fact poses two questions. The first is whether the difference between the costs actually incurred and the price actually charged is excessive. The second question is whether, if the first question is answered affirmatively, a price has been imposed which is either unfair in itself or when compared to competing products. BHB contends that the judge wrongly conflated the two questions into a single question, namely whether the charges specified by BHB were excessive.*
>
> *117. Secondly, the central concept in abuse of dominant position by excessive and unfair pricing is not identified as the cost of producing the product or the profit made in selling it, but as the "economic value of the product supplied." The selling price of a product is excessive and an abuse "if it has no reasonable relation to its economic value."*
>
> *118. Thirdly, the court did not say that the economic value of a product is always ascertained by reference to the cost of producing it plus a reasonable profit (cost +), or that a higher price than cost + is necessarily an excessive price and an abuse of a dominant position. The court was indicating that one possible way ("inter alia") of objectively determining whether the price is excessive and an abuse is to determine, if the calculation were possible, the profit margin by reference to the selling price and the cost of production.*
>
> *119. Fourthly, it has to be borne in mind that, as stated in Bronner, the law on abuse of dominant position is about distortion of competition and safeguarding the interests of consumers in the relevant market. It is not a law against suppliers making "excessive profits" by selling their products to other producers at prices yielding more than a reasonable return on the cost of production, i.e. at more than what the judge described as the*

"competitive price level". Still less is it a law under which the courts can regulate prices by fixing the fair price for a product on the application of the purchaser who complains that he is being overcharged for an essential facility by the sole supplier of it".

4.6 A number of other European Court judgments and Commission decisions and guidance have considered the question of excessive prices: Case 26/75 *General Motors v Commission* [1975] ECR 1367 (excessive charge for monopoly service); *Bodson* [1988] ECR 2479 (comparison of prices with other undertakings not enjoying exclusivity); Case 110/99 *Lucazeau v SACEM* [1989] ECR 2811 (comparison of prices between Member States), *Ministère Public v Tournier* [1989] ECR 2521 (high prices cannot be justified by high costs if the latter are due to lack of competition and inefficiency); *Deutsche Post AG – Interception of cross-border mail* OJ 2001 L331/40 (comparison of domestic and international tariffs where costs difficult to ascertain); and the Commission's *Notice on the Application of the Competition Rules to Access Agreements in the Telecommunications Sector* OJ 1998 C265/2 (the "*Telecommunications Notice*").

4.7 The burden of proof in showing unfair pricing is on the regulatory decision maker. Any doubt must benefit the alleged infringer. See paragraph 265 of *United Brands* and Article 2 of Regulation 1/2003: "*In any national or Community proceedings for the application of Articles 81 and 82 of the Treaty, the burden of proving an infringement of Article 81(1) or of Article 82 of the Treaty shall rest on the party or the authority alleging the infringement*"... In *Scandlines*, the Commission stated that "*the burden of the proof is on the Commission to demonstrate, based on cogent evidence, the existence of such an abuse*".

4.8 The Tribunal has made detailed observations on the burden and standard of proof in the *Replica Kit*[10] judgment at paragraphs 164 to 208. In particular, the Tribunal gave the following guidance on the nature of the evidence which is required to satisfy the test:

"198. First, we accept that in the present case an allegation of an infringement of the Chapter I prohibition is a serious matter involving penalties.

199. Secondly, in our judgment it is important to distinguish between two different things: what the test is, on the one hand, and what is the nature of the evidence necessary to satisfy the test, on the other. As regards the test, the civil standard is the balance of probabilities. As regards the nature of the evidence, the authorities cited above show that where serious matters are in issue, for example conduct akin to dishonesty, the quality and weight of the evidence needs to be stronger than it would need to be if the

[10] *JJB Sports PLC v Office of Fair Trading* [2004] CAT 17.

allegations were less serious. As we understand Re H, the law in effect presumes that conduct akin to dishonesty, or capable of attracting penalties, is less likely than honest conduct. In addition, in a case such as the present, the presumption of innocence applies.

200. In these circumstances, in applying the balance of probabilities in a case involving penalties, the Tribunal must be satisfied that the quality and weight of the evidence is sufficiently strong to overcome the presumption that the party in question has not engaged in unlawful conduct. For example, if in a borderline case the decision is finely balanced and the Tribunal finds itself to-ing and fro-ing, the correct analysis is that the evidence is not sufficiently strong to satisfy the Tribunal on the balance of probabilities that the infringement occurred.

201. In other words, the Tribunal will not apply what Lord Bingham described in B v Chief Constable at [31] as a "bare balance of probabilities" but will direct itself in accordance with the speech of Lord Nicholls in Re H at p. 586, that "…even in civil proceedings a court should be more sure before finding serious allegations proved than when deciding less serious or trivial matters". We take the reference to "more sure" in the speech of Lord Nicholls to be a reference to the quality and weight of the evidence to which the test is to be applied: the more serious the allegation, the more cogent should be the evidence before the court concludes that the allegation is established on the preponderance of probabilities. Among many examples in the civil courts, we note in particular that this approach applies in cases involving the disqualification of directors, which is now one of the possible consequences of a finding of infringement under the Act, as mentioned above: see notably the judgment of Neuburger J as he then was in Re Verby Print [1998] 2 BCLC 23 [1998] BCC 652 under the heading "The burden and standard of proof."

4.9 However, the Tribunal has also emphasised that the requirement for strong evidence should not be interpreted in an unduly cautious way:

"204. It also follows that the reference by the Tribunal to "strong and compelling" evidence at [109] of Napp should not be interpreted as meaning that something akin to the criminal standard is applicable to these proceedings. The standard remains the civil standard. The evidence must however be sufficient to convince the Tribunal in the circumstances of the particular case, and to overcome the presumption of innocence to which the undertaking concerned is entitled.

205. What evidence is likely to be sufficiently convincing to prove the infringement will depend on the circumstances and the facts. In

Claymore Dairies v. OFT [2003] CAT 18 the Tribunal was concerned that Napp might be interpreted by the OFT or other regulators in an unduly cautious way, inhibiting the enforcement of the Act. A similar issue arises in certain Chapter II cases currently pending before the Tribunal."

The First Issue: calculating the costs of providing the relevant services

4.10 As to the first limb of the *United Brands* test, it is necessary to determine the costs of the product or service provided by means of appropriate cost allocation. In the *Telecommunications Notice*, the Commission stated at paragraph 107:

> "*It is necessary for the Commission to determine what the actual costs for the relevant product are. Appropriate cost allocation is therefore fundamental to determining whether a price is excessive. For example, where a company is engaged in a number of activities, it will be necessary to allocate relevant costs to the various activities, together with an appropriate contribution towards common costs. It may also be appropriate for the Commission to determine the proper cost allocation methodology where this is a subject of dispute*."

4.11 In the Main Judgment, the Tribunal emphasised the fundamental importance of appropriate costs allocation at paragraph 314:

> "*In our judgment, it follows from United Brands, cited above, that a central element in determining whether a price is excessive is to determine "the costs actually incurred" (paragraph 252) by an analysis of the relevant cost structure (paragraph 251). In accordance with the Telecommunications Notice, cited above, it is necessary to determine "the direct costs" and appropriate cost allocation is therefore fundamental. It is necessary to allocate relevant costs to the activity in question, together with an appropriate contribution towards common costs* (paragraph 107).

4.12 The difficulty of making appropriate cost allocations with information which is not disaggregated is illustrated by the approach of the Commission in its decision in *Scandlines*.

4.13 Where a cost allocation methodology entails a complex economic assessment, there must be a margin of discretion (see Case T-320/03 *France Télécom*, judgment of the Court of First Instance of 30 January 2007 at paragraph 129: "*as the choice of method of calculation as to the rate of recovery of costs entails a complex economic assessment on the part of the Commission, the Commission must be afforded a broad discretion (see, to that*

effect, Case C-7/95 P John Deere v Commission [1998] ECR I-3111, paragraph 34, and the case-law cited)").

The Second Issue: whether the price is unfair

First limb: whether the difference between the costs actually incurred and the price actually charged is excessive

4.14 If the calculation under the First Issue shows a positive price-cost margin, this establishes that the price exceeds the cost of providing the relevant services. However, that is not necessarily sufficient to establish that the price is "excessive" for the purposes of the first limb of the test. There is a distinction between "an excess of" price over cost and whether a price is "excessive".

4.15 In *Scandlines*[11], the Commission drew the preliminary conclusion that "*the mere fact that revenues may exceed costs actually incurred is not sufficient to conclude that the price is 'excessive' in the meaning of the first question posed by the Court in paragraph 252 of the United Brands judgement*" (paragraph 142). However, the Commission did not go on to express any views on when an excess of revenues over costs becomes "excessive"; nor is there any guidance in *United Brands* itself.

4.16 In the Authority's view, a price may not be "excessive" within the meaning of the first limb of the test where the price exceeds costs but not by a material extent. In its letter of 16 May 2007, Dŵr Cymru submitted that the second limb of the test can come into play only if the Authority has carried out an assessment of whether the difference between cost and price is "sufficiently material" to be excessive and has concluded that it is so. The Authority considers it is inapt to apply degrees of materiality; the excess is either material or not. The Authority does not therefore accept that, if the excess is material, it should go on to consider whether that excess is "sufficiently material" or "insufficiently material".

Second limb: whether the price is unfair in itself or by reference to comparators

4.17 The Tribunal observed at paragraph 310 of the Main Judgment that the second question involves a considerable margin of appreciation:

> *"Whether a given price bears "no reasonable relation" to its "economic value" is a matter of fact and degree, which in our judgment involves a considerable margin of appreciation, not least because the notion of the "economic value" and whether the price has a "reasonable" relation to that value are matters of judgment. It is particularly a matter of fact and degree to decide how far*

[11] Case COMP/A.36.568/D3 – *Scandlines Sverige AB v Port of Helsingborg.*

above "the economic value" a price has to be before it can be said to bear "no reasonable relation" to that economic value".

4.18 *United Brands* provides that one means of determining whether a price is unfair may be by comparing it to competing products. As the Commission observed in its decision in *Scandlines* at paragraphs 169 to 175, the comparison must be made on a consistent basis:

"*169. It may be possible in the abstract, as Scandlines suggests, to make a comparison between different figures representing prices of products or services. The problem is to ensure that the comparison is valid and that the result of the comparison is meaningful. It must be ensured that the figures which are compared are really comparable. The conditions under which such a comparison is made are therefore of the utmost importance.*

170. If it were possible to find a substitutable product or service provided by competitors on the same relevant market, the price of such a product/service on this market could serve as a reference for the price of the product/service in question (to be compared with the contested price). However, such a reference cannot be found in this case, since HHAB holds a monopoly position on the relevant market.

171. According to case law and the decisional practice of the Commission, the contested price may however be compared to (i) other prices charged by the dominant company on a market different from the relevant market or (ii) prices charged by other firms providing similar products/services on other relevant markets.

172. In the former alternative above, two profitable prices that the dominant company charges for the same product/service, respectively on the relevant market and on another market, may be compared. This would notably address the situation of an undertaking charging, for the same product/service, higher prices on a market where it holds a dominant position than on other markets where it faces competition. This approach was followed by the Commission in General Motors and British Leyland and implicitly endorsed by the Court in United Brands. Such a comparison is made in section II.B.2.2.b) below where the prices charged by HHAB to the ferry-operators on the relevant market (where HHAB holds a monopoly position) is compared to the prices it charges to cargo vessels, on a competitive market.

173. The approach in the latter alternative was upheld by the Court in Bodson v Pompes funèbres des regions libérées. In this case, the Court referred to the possibility, in order to determine

whether the prices charged by concession holders are excessive, to make a comparison between those prices (offered on a market which is not competitive) and 'prices charged elsewhere' (on a market which is not covered by the public concession and which is therefore open to competition).

174. Reference can also be made to the judgment of the court in François Lucazeau and others v SACEM and others. SACEM is a national copyright-management society dealing with musical works which also manages the repertoires of national societies of other Member States. The markets concerned were not clearly defined, but the Court seems to have considered that each Member State constituted a separate relevant market. The Court explained that: 'When an undertaking holding a dominant position imposes scales of fees for its services which are appreciably higher than those charged in other Member States and where a comparison of the fee levels has been made on a consistent basis, that difference must be regarded as indicative of an abuse of a dominant position. In such a case it is for the undertaking in question to justify the difference by reference to objective dissimilarities between the situation in the Member State concerned and the situation prevailing in all the other Member States'.

175. It can be deduced from the latter case that a comparison of the prices must be made on a consistent basis. This notably implies that:

- *the products/services compared must be comparable; and*
- *the charging systems must allow a meaningful comparison*".

4.19 As to the question of whether a price is unfair in itself, there is very little guidance on what is meant by the concept of a price being "unfair in itself", as per the observations of the Commission at paragraphs 217 to 218 of its decision in *Scandlines*:

"*217. The case law of the Court of First Instance and the [ECJ] as well as the decisional practice of the Commission provides little guidance on how to determine whether a price must be considered unfair in itself.*

218. While the ECJ in United Brands stated that 'charging a price which is excessive because it has no reasonable relation to the economic value of the product supplied would be such an abuse, it provided no further details on how to determine this 'economic value' of the product/service provided".

4.20 In *Scandlines* at paragraph 221, the Commission stated that it was inappropriate simply to adopt a cost-plus analysis, without

considering whether there are non-cost related factors which affect the "economic value" of the product/service being provided:

"*221. The Commission does not exclude that the question whether a price is unfair may be assessed within a cost-plus framework which encompasses the respective relations between the production costs, the price (or the profit margin) and the economic value of the product/service. However, in such an assessment, the economic value of the product/service cannot simply be determined by adding to the costs incurred in the provision of this product/service a profit margin which would be a pre-determined percentage of the production costs*".

4.21 The economic value must be determined with regards to the particular circumstances of the case and must also take into account any relevant non-cost related factors such as the demand for the product/service (i.e. the valuation by the customers and consumers of the product/service): see *Scandlines* at paragraphs 232 and 241.

4.22 This approach, namely taking into account any relevant non-cost related factors or "externalities" in order to determine the economic value of a product/service, was endorsed by the Court of Appeal in *Attheraces* at paragraphs 213 to 215:

"*213. As already noted, the Commission's decision in Scandlines supports the view that the exercise under Article 82, while it starts from a comparison of the cost of production with the price charged, is not determined by the comparison. This in itself is sufficient to exclude a cost + test as definitive of abuse. Mr Roth accepts that there is no single methodology or litmus test of abuse: the court has a choice of methods, but not an unlimited one. His contention is that the judge has gone outside the admissible limits of method in coming to his conclusion. Mr Hollander, also contending that the choice of methodology is for the court, defends both the choice made by the judge and the way he has implemented it.*

214. As the expert witnesses in the present case agreed, economic theory recognises the relevance of externalities to price. The judge rejected BHB's argument that the benefit of the system to overseas bookmakers was a relevant externality. But it was incontestable that the overseas bookmakers were paying ATR, in a competitive market, amounts which afforded it a handsome profit which it wanted, so far as possible, to keep. The facts found by the judge do not suggest that anybody is going to go out of business as a result of the alleged abuse of dominant position. Despite its elaborate legal and economic arguments and the high levels of moral indignation, the case is about who is going to get their hands on ATR's revenues from overseas bookmakers. There is no need to classify the benefit derived by the bookmakers

from the deployment of part of BHB's products as a "positive externality" in order to recognise that it has a bearing on whether their pricing is excessive.

215. This said, we accept that there is moral force in ATR's position. ATR adds value (in the form of pictures of the races) to the pre-race data and has the task of collecting overseas bookmakers' payments. It is taking all the risks and, as the judge found, will have to absorb most or all of the costs, while BHB seeks to take half of what they make. This may be thought to be unfair, but it cannot alone make it an abuse of BHB's dominant position. As Jacobs A-G said in Bronner (cited above), the principal object of Article 82 of the Treaty is the protection of consumers, in this case the punters, not of business competitors. In our judgment, this is correct, even if it is the competitors and not the consumers who are alleging abuse of dominant position. We need to look beyond ATR's immediate interests to the market served by ATR. There is little, if any, evidence that competition in the market is being distorted by the demands made by BHB upon ATR."

4.23 The Court of Appeal emphasised that the analysis should bear in mind the purpose of Article 82, namely preventing the abuse of dominant market positions with the object of protecting and promoting competition: see paragraphs 119, 215 and 217 of *Attheraces*. Distortion of competition on the relevant market arising from the price is accordingly a relevant factor in the determination of whether a price is unfair in itself.

4.24 Neither *Attheraces* nor *Scandlines* states that the cost of providing a service can never represent its economic value. Neither case excludes the possibility of a finding that, in the absence of any relevant non-cost related factors, the cost of providing the service can be taken to represent its economic value.

4.25 In *Deutsche Post*, the Commission found the tariff charged by Deutsche Post bore no "*sufficient or reasonable relationship to the real costs or to the real value of the service provided*", having regard to the following: (i) adopting a cautious approach, the price exceeded the economic value of the service by at least 25%, and if an alternative benchmark were used, the price exceeded the economic value of the service by 43%; (ii) Deutsche Post was a monopolist and (iii) the peculiarities of postal services (at paragraphs 166 to 177). Consequently, Deutsche Post's pricing exploited customers excessively and was therefore an unfair selling price within the meaning of Article 82. In that case, the Commission appears to have used the cost of providing the service as representative of its economic value.

PART II: THE FIRST ISSUE – WHETHER, AND IF SO THE EXTENT TO WHICH, THE FIRST ACCESS PRICE IS UNRELATED TO COSTS

In accordance with the two stages of work referred by the Tribunal, and the legal test for unfair pricing, the Authority must first determine whether, and if so, to what extent the FAP is unrelated to the costs of the service provided. It is only if the FAP is found to exceed the costs of the relevant service provided by Dŵr Cymru to Albion, that the second stage (i.e. of considering whether the FAP was an unfair price within the meaning of the Chapter II prohibition) arises.

In order to determine whether the FAP is related to costs, the service components for which the costs are charged must first be identified. This has been a matter of dispute between the parties. This issue is examined below.

Dŵr Cymru questioned the term "services" used in the Draft Assessment in its letter of 17 May 2007 and preferred the terms "functions" or "sub-functions". The Authority notes that in Dŵr Cymru's letter to the Authority of 20 February 2001 Dŵr Cymru referred to the FAP being calculated "*on a whole company average basis for each of the services [Albion] has requested*." In this section, the Authority has continued to use the term "services" as Dŵr Cymru did in 2001 as it is simpler to understand. However, the Authority acknowledges that the term "service components", "functions" or "sub-functions" might be more strictly appropriate as they make it clear that the overall service to be provided to Albion was common carriage but there were various components required to provide that service. The Authority has adopted this functional terminology more in the AAC-plus methodology discussed in section 7.

5. IDENTIFYING THE RELEVANT SERVICES

5.1 To investigate the costs reasonably covered by the FAP, it is first appropriate to identify the services Albion would have required in 2000/01 from Dŵr Cymru for its common carriage proposal. From the submissions made by the parties, it appears to the Authority that there is currently no agreement on precisely which services the FAP covered (see in particular Albion's letter of 12 March 2007 and Dŵr Cymru's letters of 15 March 2007 and 4 April 2007).

Was the FAP indicative?

5.2 Albion and Dŵr Cymru are currently in dispute over whether the FAP was an "indicative" or a "final" access price. This question is related to whether there was an agreement on what services the FAP covered.

5.3 Dŵr Cymru claims in its letter of 4 April 2007 that the FAP it gave at the time was "indicative" because the mechanisms about how common carriage would work and what it would cost "*had not been worked out by the parties*". In Dŵr Cymru's letter of 26 March

2007, Dŵr Cymru states that in March 2001 at the time of the FAP Albion had not set out its common carriage requirements or how common carriage might have worked. Dŵr Cymru stated that negotiations had not actually commenced on how common carriage would actually work. Dŵr Cymru made similar points in its letters of 15 May 2007, 22 May 2007 and 23 May 2007 (second letter of that date).

5.4 Albion, on the other hand, claims in its letter of 5 April 2007 that it provided contemporaneous evidence that the proposed common carriage arrangements would mirror previous operating arrangements that had worked well for 20 years and were well-understood. Albion states that the service parameters it sought for common carriage mirror those in the SBSA except that there would be a separate agreement with United Utilities for bulk supply (see Albion's letter dated 6 April 2007). Albion repeated its position that the FAP was not indicative in its letters of 8 May 2007, 21 May 2007 (third letter of that date) and the tri-partite meeting of 18 May 2007 (for example, transcript page 13, lines 21-23 and transcript page 14, lines 5-7).

5.5 The Authority has reviewed the contemporaneous correspondence to see whether the FAP was indicative or final. Dŵr Cymru's note of a meeting, between Dŵr Cymru and Albion only, on 16 January 2001 stated:

"*[Dŵr Cymru] issued [Enviro-Logic] with an indicative price of around 20p/m3 for the services [Enviro-Logic] have requested namely treatment to non-potable standard and bulk distribution.*

[Enviro-Logic] requested formal confirmation of this together with a breakdown of its derivation."

5.6 Dŵr Cymru wrote to the Authority on 20 February 2001 stating amongst other things:

"*1. The price that we are minded to charge [Albion] for the services requested is 23.2p/m^3. This is the 2000/01 price*."

"*2. […] The level and structure of these prices reflects our current thinking and is in line with the Dŵr Cymru Network Access Code. However, a detailed analysis of common carriage pricing is ongoing and the company may refine its approach in due course in accordance with the objective of preparing a comprehensive and fair access pricing scheme for all situations."*

"*4. The price was unable to be considered at the December Board meeting, hence the release of the price was delayed until January. The price was released to Albion the day after Board approval was received*."

5.7 In the Authority's letter to Dŵr Cymru of 1 March 2001, the Authority stated "[*T]hank you for your letter of 20 February, in which you provide an indicative access price and supporting methodology. I was disappointed that you did not provide this directly to [Albion]. This means that Dŵr Cymru has still not given a written access price to Albion, five months after one was requested. […] I will expect both parties to discuss the indicative price in a proper and professional manner. I would also expect Dŵr Cymru to comment on Albion's proposed access price as part of this negotiation process*."

5.8 Also on 1 March 2001, the Authority wrote to Enviro-Logic stating "*[I] have received an indicative access price, and methodology for its calculation from Dŵr Cymru, and have asked them to provide it directly to you. […] You will note that I have asked Dŵr Cymru to negotiate the price directly with you, since there is currently no question of [the Authority] "approving" Dŵr Cymru's access price. As a corollary, I expect [Albion] to negotiate constructively with Dŵr Cymru*."

5.9 Dŵr Cymru wrote to Enviro-Logic on 2 March 2001, stating "*[A]s promised I enclose the letter I sent to [the Authority] on 20 February 2001; this includes the access price for 2000/01 and supporting information. Julie [Griffiths of [the Authority] has asked that Dŵr Cymru comment on your proposed access price so I would appreciate if you could send me the equivalent supporting information for your price. In Jeremy's letter to Dave Holton of 20 October 2000 it is stated that your price is the result of extensive analysis, perhaps we could see that? After this exchange of information it would be sensible to meet to take the matter foreword (sic), could you let me know your availability?*"

5.10 Enviro-Logic replied to the Authority on 7 March 2001, stating "*[T]hank you for your letter of 1 March 2001, addressed to Roddy Monroe, and for your action in requiring Dŵr Cymru to provide an indicative access prices and methodology for its calculation. […] You have asked that [Albion] should negotiate constructively with Dŵr Cymru. Dŵr Cymru's continuing refusal to do so was part of our original complaint on which we are seeking a resolution from [the Authority] as a concurrent competition regulator*."

5.11 Enviro-Logic also wrote to the Authority on 8 March 2001, stating "*[F]urther to my letter of 7 March 2001 I now write to inform you that having reviewed Dŵr Cymru's methodology and indicative access price, [Albion] is now of the view that this constitutes and maintains an abuse of the Competition Act 1998. […] [Albion] firmly believes that this is a complaint of anti-competitive behaviour, which needs to be resolved by [the Authority], and that there is little benefit in negotiating with Dŵr Cymru. May I again remind you that it was Dŵr Cymru's consistent refusal to negotiate that led [Albion] to resort to the original complaint. Furthermore,*

[Albion] has been informed by Dŵr Cymru that these figures have been signed off by their Board and are not or (sic) negotiation."

5.12 The Authority replied to Enviro-Logic on 16 March 2001, that *"[…] it is unfortunate that you do not wish to negotiate with Dŵr Cymru. If you have issues with the way in which the access price has been constructed, and have strong evidence to support your views, it would seem sensible to address these views directly to Dŵr Cymru. In particular, you quote members of Dŵr Cymru and it would be appropriate to allow them to respond.*"

5.13 The contemporaneous correspondence provides some evidence that the FAP was a final price as follows: (1) negotiations had been going on between Dŵr Cymru and Enviro-Logic for 5 months by the time the FAP was offered; (2) the 20p/m^3 price offered on 16 January 2001 might be considered the indicative access price preceding formal confirmation in the FAP; (3) Dŵr Cymru's letters of 20 February 2001 to the Authority and Enviro-Logic of 2 March 2001 called the FAP the access price for 2000/01; (4) the FAP was approved by the Board of Dŵr Cymru; and (5) Enviro-Logic claimed in letters of 7 March 2001 and 8 March 2001 that Dŵr Cymru was refusing to negotiate further.

5.14 However, the contemporaneous evidence also provides evidence that the FAP was indicative as follows: (1) Dŵr Cymru's letter of 20 February 2001 to the Authority suggested that Dŵr Cymru might refine its approach to access pricing generally; (2) the Authority considered the FAP to be indicative in its letters of 1 March 2001 to Enviro-Logic and to Dŵr Cymru and Enviro-Logic referred to an indicative access price in its letters of 7 and 8 March 2001 to the Authority; (3) the Authority considered further negotiation on the FAP should occur in its letters of 1 March 2001 to Enviro-Logic and Dŵr Cymru and in its letter of 16 March 2001 to Enviro-Logic; and (4) Dŵr Cymru appeared to be offering further discussions on the access price in its letter of 2 March 2001 to Enviro-Logic.

5.15 For the Referred Work, the Authority does not need to conclude whether the FAP was indicative or not. However, the contemporaneous evidence above suggests that there was some uncertainty over the FAP's status and that negotiations might have continued were it not for the Complaint.

The methodology Dŵr Cymru used

5.16 Dŵr Cymru's AAC methodology underpinning the FAP of 23.2p/m^3 was applied at a relatively aggregate level and consisted of Dŵr Cymru's unit cost of non-potable treatment added to Dŵr Cymru's unit cost of bulk water distribution (see paragraph 257 of the Decision) which suggests to the Authority that the detailed workings of the common carriage arrangements were not

addressed in the FAP and that any final access price in 2001 would have needed to take the detail of such arrangements into account.

5.17 It is common ground that the FAP covered the partial treatment and transportation costs associated with the Ashgrove system and that the Tribunal has asked the Authority to investigate those costs. However, there are other costs associated with the operation of the Ashgrove system such as the back-up supply, issues of flow balancing and common carriage customer services which Albion considers were addressed in 2001 and Dŵr Cymru states were not. These are dealt with below.

5.18 At the time of the FAP, the Authority recognised the difficulty of defining the precise service and costs attaching to a common carriage agreement in advance, especially given that common carriage was new to the water industry in 2000/01. For example, in MD 162 "*Common carriage – statement of principles*" of 12 April 2000 the Authority suggested that "[*A*] *trial period could provide flexibility to deal with problems [arising from common carriage] before committing both entrant and incumbent to a longer term arrangement*."

Systems linked to the Ashgrove system and Shotton Paper

5.19 Whilst the Ashgrove system appears relatively simple, it is complicated by: (1) the involvement of five separate parties: Dŵr Cymru (water supply and sewerage), Albion, United Utilities, Corus Shotton and Shotton Paper through various contractual agreements; and (2) the associated (direct and indirect) connections to other infrastructure/networks.

5.20 In summary, water is currently, and at the time of the FAP, abstracted from the River Dee at Heronbridge and pumped by United Utilities to the transfer point with Dŵr Cymru. The water is then transported up to the Ashgrove WTW by Dŵr Cymru where it is treated using settlement and coagulation. From here, the water flows under gravity through Dŵr Cymru's 700mm non-potable distribution main to two customers at Shotton – Shotton Paper and Corus Shotton. The whole supply system is managed by Dŵr Cymru through its regional controllers who are located at Bretton WTW (and who also serve the whole North Wales area). The Bretton control room monitors the treatment works and the flow to and level of the Corus lagoons. If required the controllers can remotely open and close valves to control inlet flows to the Corus lagoons and to Shotton.

5.21 The Ashgrove system is connected to three other infrastructure systems:

- the United Utilities' raw water supply system[12] (the Heronbridge system);
- the Corus lagoons; and
- Dŵr Cymru's STW (at Chester).

In addition Shotton Paper is directly connected to:

- Dŵr Cymru's trunk potable distribution system.

Product/Services Dŵr Cymru would supply to Albion under common carriage which would be included in the FAP

5.22 The main services which in the Authority's view Dŵr Cymru would have provided to Albion under a common carriage arrangement in 2000/01 and which would underlie the FAP are detailed in **Table 1** below. The retail customer, Shotton Paper, would also receive the water resource (for which Albion would pay United Utilities) and retail services. However, those two services are not part of the common carriage service Dŵr Cymru would provide to Albion.

Table 1 – Services Dŵr Cymru would need to provide to Albion under a common carriage arrangement in 2000/01 which in the Authority's view were covered by the FAP

Service
Transportation via the Raw Water Aqueduct (from Heronbridge to Ashgrove WTW)
Water Treatment (partial treatment, at Ashgrove WTW)
Sludge Management (disposal via sludge main to Chester STW)
Water Distribution (under gravity, from Ashgrove WTW to Shotton Paper site)
Water Storage (via rented Corus lagoons)
Operational Control (including computer facilities at Bretton WTW and the associated telemetry/metering)
Back-up supply (the 8 Ml/day potable back up for the non-potable water supply)
Common carriage services to Albion (operational management of the system, billing, customer services to Albion)

[12] Note that there is a cross connection to United Utilities' Curzon Park pipeline.

5.23 Each service identified in **Table 1** is described below.

5.24 **Raw Water Aqueducts:** The water United Utilities abstracts from the River Dee at Heronbridge is pumped to the transfer point with Dŵr Cymru. After the transfer point there is about 0.8km of raw water aqueduct before the water enters the Ashgrove WTW. Albion would require access to this short length of raw water aqueduct as part of the common carriage service. This length of raw water aqueduct is a constituent part of the transportation costs the Tribunal asked the Authority to investigate at paragraph 360(iii) of the Further Judgment. Albion confirmed that it sought this service in 2000 in its letter to the Authority of 8 May 2007.

5.25 **Partial Water Treatment:** The water supplied to Shotton receives partial treatment at the Ashgrove WTW. Schedule 1 of the draft common carriage agreement (attached as Annex A to Albion's letter of 12 March 2007) states that the common carriage service to be provided included the "*treatment of water by settlement and chemically assisted coagulation determined by raw water conditions at Dŵr Cymru's Ashgrove [WTW]*" (section 1.1). It is not in dispute that Albion would want the water it inputted into Dŵr Cymru's system to serve Shotton Paper to be partially treated at the Ashgrove WTW. The Tribunal directly asked the Authority to investigate the cost reasonably attributable to the partial treatment of water by Dŵr Cymru through the Ashgrove system at paragraph 360(iii) of the Further Judgment. Albion confirmed that it sought this service in 2000 in its letter to the Authority of 8 May 2007.

5.26 **Sludge management:** The water sludge from the Ashgrove WTW is currently transported by a dedicated 1.7km sludge main and sewer to the Chester STW. It is then disposed of with the sewage sludge from the Chester STW. At the time the FAP was offered (March 2001), the water sludge was discharged direct to receiving waters. However, Dŵr Cymru states that at this time it was "*already considering alternative [disposal] options*" in 2000 for the sludge from the Ashgrove WTW (Dŵr Cymru letter dated 15 March 2007, page 4, response to further questions) to provide a more environmentally benign sludge disposal solution. Albion responded in a letter of 19 March 2007 that "*[A]t the time of the FAP, sludge was discharged to the river Dee. Discharge to Chester STW was not apparently the favoured option until late in 2001"*. The Authority understands that the sludge began to be disposed to the Chester STW in 2002/03.

5.27 In the Authority's view, the additional costs of sludge management were attributable to the Ashgrove system in 2001 as any plausible common carriage agreement between the parties would have lasted for several years (the draft common carriage agreement provided by Albion on 12 March 2007 stated 10 years) and would

have mostly covered a period during which the sludge was transported to the Chester STW. An indicative common carriage access price that excluded these forthcoming sludge management costs would not have been particularly indicative. In its letter to the Authority of 8 May 2007, Albion confirmed that it sought this sludge management service in 2000 and that any forward looking price would anticipate cessation of the discharge direct to river.

5.28 **Water distribution:** Under the proposed common carriage arrangements in 2000/01, it is not in dispute that Albion would have needed access to the 15.7km of Dŵr Cymru's 700mm non-potable distribution main from the Ashgrove WTW to Shotton Paper and Corus Shotton. The water flows under gravity through the main to the two customers. This constitutes the longest element of the transportation service through the Ashgrove system which the Tribunal asked the Authority to investigate the reasonable costs of at paragraph 360(iii) of the Further Judgment. Albion confirmed that it sought this service in 2000 in its letter to the Authority of 8 May 2007.

5.29 **Water storage:** Any excess water flowing to Shotton Paper is directed to the Corus lagoons. The Corus lagoons are used by Dŵr Cymru for this specific "overflow" purpose. The parties do not dispute that "*the Corus lagoons do not balance flow in the conventional sense (i.e. water accumulating in storage during low demand and meeting customer demand during high demand), they merely receive excess water*" (Albion letter dated 19 March 2007, response to Q1a). This is accepted by all the parties.

5.30 However, the parties are in dispute over the function provided by the Corus water storage lagoons. In its first letter of 8 May 2007, Albion stated "*[T]he Corus lagoons perform the purpose of allowing an overflow from the Ashgrove system and describing their purpose as flow balancing or water storage is, as [the Authority] accepts, misleading. For the avoidance of doubt, Albion accepts that the lagoons were an essential feature of the management of the Ashgrove system at the relevant time but they conferred no direct benefit on Albion by providing storage or flow balancing in times of high demand*." For the record, the Authority does not accept that describing the lagoons as providing a flow balancing or water storage function is misleading, as the lagoons do help with the flow balancing of the Ashgrove system, just not in the conventional sense, and they do store water for Corus.

5.31 Dŵr Cymru responded on 15 May 2007 stating that "[…] *Service reservoirs and water towers do not provide a "service" to customers. They perform a function as part of Dŵr Cymru's operation of water supply systems. Although the Corus lagoons are not situated directly between the Ashgrove works and the Shotton Paper connection, they do provide a buffer between the two, both when Shotton Paper's requirements increase sharply*

(because they enable the operators to deliver all the available water to Shotton Paper whilst Corus draws down the lagoons) and when they fall sharply (because they enable the operators to divert water and slow down the rate of flow through the Ashgrove works more gradually)." Dŵr Cymru went on to say that "*it is not true that their presence confers no benefit on Albion and Shotton Paper. If they had not been used, the sudden changes in Shotton Paper's demands would have led to greater fluctuations in flow through the Ashgrove system, leading to a reduction in delivered water quality*."

5.32 Flow balancing is especially important when demand fluctuates. The extent to which Shotton Paper's demand fluctuates is also in dispute between the parties. In her witness statement, Lynnette Cross commented "*Shotton's demand has potential for large changes over short periods of time and the Corus lagoons are essential to balance short term changes in Shotton's demands and to maintain steady flows through the Ashgrove system*" (paragraph 13 of Lynnette Cross' witness statement dated 19 October 2004). Dŵr Cymru also considers that "*[U]nlike the majority of large industrial customers, Shotton Paper does not have significant on-site (functioning) flow balancing*" (in footnote 7 of its letter dated 26 March 2007). On the other hand, Albion considers that "*[T]he problem for Dŵr Cymru is that when Shotton Paper's daily demand is analysed according to that same definition, we find that significantly more than 90% of daily demand is within 15% of the average and therefore, to quote Dŵr Cymru's own words, "certainly could not be reasonably described as dramatic fluctuation*"" (Albion's first letter of 30 May 2007).

5.33 The parties are also in dispute as to the extent to which the lagoons have helped to balance the flow through the Ashgrove system and therefore the extent of the service provided by the lagoons. At the tri-partite meeting held on 18 May 2007, Albion stated "*[I] think as well that we need to be a little bit careful here about the effect of those lagoons […] There isn't steady flow through the Ashgrove system. Flow through the Ashgrove system does, ordinarily, fluctuate quite dramatically*" (transcript, page 22, lines 1 to 8). Dŵr Cymru responded in a letter of 22 May 2007 stating that Albion's statements were not supported by the evidence and in particular that "*the flows fluctuate by a margin of approximately 15% around their mean. By the standards of water supply systems, this is "steady", and certainly could not be reasonably described as "dramatic fluctuation*" (page 2).

5.34 Flow balancing is more important when there is less on-site storage at the customer's site. This issue is in dispute. At the tri-partite meeting held on 18 May 2007, Albion stated that it thought Shotton Paper had "*10Mls on site storage*" (transcript page 23, line 25) and that "*[w]e do not agree that Shotton Paper is unusual in its storage and, indeed, in its very active use of that storage*" (transcript page 71, lines 3 to 6). Dŵr Cymru considers that

previous comments Albion has made imply "*a capacity of 6-7 Ml*" (letter of 22 May 2007). Dŵr Cymru added in its second letter of 23 May 2007 that "*6-7Ml, or 8 hours supply, […] is small by comparison with other large industrial customers*."

5.35 There is a lot of disagreement between the parties on the subject of the lagoons as described above. However, it appears that the parties agree that access to the lagoons in order to manage flows through the Ashgrove system would have been required as part of the common carriage services provided by Dŵr Cymru to Albion in 2000/01. Under the bulk supply arrangements in place between Albion and Dŵr Cymru in March 2001, Albion was using the service provided by the lagoons and the cost of those lagoons was effectively wrapped up in the SBSA price. The Authority considers that in 2000/01, Albion would have required the service provided by the lagoons as part of the common carriage arrangements. Therefore the Authority concludes that the costs of the lagoons should be included in the FAP.

5.36 **Operational Control:** The Ashgrove system is managed by Dŵr Cymru through its regional controllers who are located at the Bretton WTW (and who also serve the whole North Wales area). The Bretton control room monitors the treatment works and the flow to and level of the Corus lagoons. The controllers can remotely open and close valves to control inlet flows to the Corus lagoons and to Shotton. In order for Dŵr Cymru to provide the partial treatment and transportation services to which Albion sought access, Dŵr Cymru would need to use its operational control assets. As a result, operational controls constitutes a cost reasonably attributable to the partial treatment and transportation services the Tribunal asked the Authority to investigate at paragraph 360(iii) of the Further Judgment. Albion confirmed that it sought this service in 2000 in its letter to the Authority of 8 May 2007.

5.37 **Back-up supply:** One of the main disputes over the services required under the common carriage arrangements that would have been required in 2001 is the back-up supply. That is partly because the cost of the back-up supply represents a significant proportion of the overall costs underlying the FAP (see Section 6(B)(3) for more information on the costs of the back-up supply).

5.38 In Albion's letter of 8 May 2007, Albion commented that the back-up supply was "*a new argument, introduced by [the Authority] in apparent disregard of the available evidence*" (page 4). The Authority has not considered the back-up supply before because the two methodologies used in the Decision, AAC and ECPR did not require an examination of the local costs of the Ashgrove system. The "pure" AAC used by Dŵr Cymru and critiqued by the Authority in the Decision used average costs for treatment and distribution. The ECPR used the existing retail price and

subtracted the cost of the water under the FBSA. In neither calculation did the Authority need to look at the costs of the back-up supply. The Authority was aware of the back-up supply at the time of the Decision and there is a reference to it in footnote 112 but it was not an issue in the Decision given the methodologies used. Strictly speaking, in the standalone cost calculations made by Dŵr Cymru and the Authority ahead of the 2006 hearing, the costs of the back-up supply should have been included. However, as the Authority's standalone cost calculation produced a price of 25p/m^3 there was no need to investigate the costs of the back-up supply.

5.39 The questions to be addressed with regard to the back-up supply are: (1) whether Albion would have required the back-up supply which Dŵr Cymru provided to Albion in 2000/01 (and still does provide) under the SBSA had the common carriage arrangements gone ahead; and (2) whether the costs of the back-up supply should be included in the FAP.

(1) Would Albion have required the back-up supply in 2000/01 had the common carriage arrangements gone ahead?

5.40 The parties' have made extensive submissions on the back-up supply; the Authority has also gone back to the documents contemporaneous with the negotiations on the FAP in 2000-01. The Authority has found four main items of evidence.

5.41 **Item 1** – Albion's response of 20 October 2000 to a "Dŵr Cymru Network Access Questionnaire – Preliminary Stage". Under Section 3, "Service Information", Albion responded to a series of questions about the service it required from Dŵr Cymru. At 3.7 the response states "*[W]hat contingency plans do you have in place or do you propose to put in place in the event of failure of supply in the terms of quantity and/or quality?"* ***As at pres*ent**" (bold in the original). The obvious understanding of the phrase "*As at present*" is that it refers to the then present back-up supply contained in the SBSA. Under the SBSA it was agreed that Dŵr Cymru would:

- supply a reserved amount up to 18 Ml/d of non-potable water. In addition it would endeavour to provide an additional 4 Ml/d of non-potable water on request.

- supply a reserved amount up to 8 Ml/d of potable water (plus additional volumes on request, if available) where potable water can be used by Albion to make up any shortfall (either as a partial stand-by supply or as a top-up supply) in its non-potable supply.

Albion's response to the Network Access Questionnaire response was attached as Annex B to Albion's letter of 12 March 2007.

5.42 **Item 2** – A draft common carriage agreement between Dŵr Cymru and Albion dated 8 November 2000 drafted by Albion with track changes by Dŵr Cymru's lawyers. Clause 8.1 (a) reads as follows: "*8.1 If the Network Operator is unable to carry out any of its obligations under (sic) this Agreement by reason of Fore (sic) Majeure as defined in Clause 8.3 this Agreement shall remain in effect and: (a) the Network Operator shall use all reasonable endeavours to restore its ability to carry out its obligation sunder (sic) the Agreement ~~and may on notice supply water from a source other than the Non Potable Source of Supply, including the existing back-up supply~~;*" The final phrase was struck out by Dŵr Cymru's lawyers. This draft agreement was attached as Annex A to Albion's letter of 12 March 2007.

5.43 **Item 3** - Dŵr Cymru's note of a meeting between Dŵr Cymru and Enviro-Logic held on 10 November 2000. Under the third bullet point the note states "*Brief discussion on operational aspects of [Enviro-Logic's] proposals - metering arrangements and supply security. [Malcolm Jeffery] stated that he envisaged the maintenance of existing arrangements with DCC i.e. potable back-up. only (sic) change being bulk supply from NWW. Agreed best way forward was to set up tri-partite meeting to further discussion (sic).*" The meeting note was attached to Albion's Notice of Appeal page 12/70.

5.44 **Item 4** - Dŵr Cymru's note of a meeting held on 16 January 2001 between Dŵr Cymru, Enviro-Logic and North West Water. Under Issue 7 that note states "*Existing [Bulk Supply] ([Albion] and [Dŵr Cymru]) needs to be renegotiated with current provisions either in the new [Enviro-Logic]/[North West Water] [Bulk Supply] or [Enviro-Logic]/[Dŵr Cymru] [Common Carriage] agreement. Supplier of last resort – there is a need to reflect SoLaR obligations in removal of existing [Bulk Supply].* ***[Dŵr Cymru]/[Enviro-Logic] to pursue***" (sic, bold in the original). This note was attached as Annex C to Albion's letter of 12 March 2007.

5.45 Albion appeared to accept that it would have needed the back-up supply under the common carriage arrangements at the tri-partite meeting held on 18 May 2007. At that meeting, Albion stated "*[I] think we have explained to you that our view was that, having negotiated a common carriage agreement for non-potable, we would necessarily have to renegotiate our existing bulk supply for the potable supply. No getting away from it; Albion needed a potable supply. Within that, yes, we would be looking to negotiate, as indeed we are today, in the process of negotiation with Dŵr Cymru, what the terms for a back-up potable supply would be. Those negotiations would look at reserve volume, availability, conditionality all sorts of other things. We would make an informed judgment on the service offered at that time. That was never intended as part of the quite separate non-potable supply arrangements*" (transcript page 29, lines 2 to 15).

5.46 Prior to the tri-partite meeting, in Albion's first letter of 8 May 2007, Albion argued that it had explored alternative options to a back-up supply of potable water (from the non-potable supply) and that "*the decision not to seek a back-up potable supply, as part of Albion's network application, was quite deliberate*" (page 5). Albion's alternative back-up supply was based on using existing pipework to allow water from the lagoons to be diverted to Shotton Paper, but any attempt to use that pipework deprived Corus of all its non-potable water and "*[I]t was therefore concluded that a viable project would require engineering works*" (page 5).

5.47 Dŵr Cymru responded on this point in its letter of 15 May 2007 and stated that "*Albion's announcement now to the effect that the back-up was not required at the time because some scheme was being prepared to enable Shotton Paper to use the Corus lagoons instead is irrelevant (and indeed lacks credibility)"* (page 3). Dŵr Cymru made several supporting points including that: Albion had never communicated that it did not want the back-up to Dŵr Cymru or the Authority; Malcolm Jeffery asked for the back-up at the meeting of 10 November 2000; it is unlikely the lagoons could have provided sufficient storage to provide the same benefit as the back-up supply; the lagoons are fed from the same source as the non-potable supply to Shotton Paper and do not provide independent cover; and the lagoons scheme would not provide back-up in instances when Shotton Paper's internal supply pipe bursts as occurred on 10 May 2007.

5.48 The Authority's view, based on the four items of contemporaneous evidence above, is that Albion was asking for the back-up supply to continue in 2000/01 if the common carriage arrangements had gone ahead, although the Authority acknowledges that as late as 16 January 2001 negotiations were still continuing on the back-up supply issue. The Authority finds it unlikely that Albion would not have wanted a back-up supply at all as that would have represented a major reduction in the quality of service to Shotton Paper. Albion's suggested alternative back-up supply arrangements were not sufficiently advanced in 2000/01 to represent a credible alternative and Albion was in any case asking for the back-up supply at that time. The Authority understands that if the FAP had been disaggregated and the cost of the back-up supply was made explicit, Albion might have wanted to decline the back-up service and make its own back-up arrangements (if any). However, this is a hypothetical scenario as at the time the FAP was not disaggregated and Albion did not ask for the back-up supply to be excluded.

<u>(2) Should the costs of the back-up supply be included in the FAP?</u>

5.49 Given that the Authority considers that Albion would still have required a back-up supply under the common carriage

arrangement in 2000/01 the question then arises as to whether the costs of that back-up should be included in the FAP.

5.50 Albion's view is that in 2001 it was agreed between the parties that the common carriage proposal *"did not include potable back-up"* (page 3, response to question 3(e), Albion's letter of 12 March 2007) and in particular "*the provision of a back-up potable supply was not part of the common carriage service required but would have formed part of a revised bulk supply agreement* (page 3, response to question 3(d), Albion's letter of 12 March 2007). Albion reiterated this point in its first letter of 8 May 2007 stating "*[T]he price for potable water was (and remains) distinct from that of non-potable water and there is no contemporaneous evidence or suggestion that a potable back-up supply was ever considered to be an element within the pricing of the non-potable bulk supply price or the FAP*" (page 4). At the tri-partite meeting held on 18 May 2007 Albion also stated that the back-up supply "*was never intended as part of the quite separate non-potable supply arrangements*" (transcript page 29, lines 13 to 15). Albion repeated this position in its first and third letters of 21 May 2007 and its letter of 30 May 2007. In the third letter of 21 May 2007, Albion explained that "*[T]o the extent that a back-up potable supply was needed at the time (and until the alternative configuration of the Corus lagoons could be engineered) it was clear to all the parties that it would have been negotiated as part of the separate potable bulk supply agreement*" (page 2).

5.51 In its letter of 5 March 2007, Dŵr Cymru's view on the back-up supply was that the benefits of the back-up *"were "bundled" together with the basic water supply service in one single volumetric price*" in the SBSA but that *"[T]he [FAP] did not include any allowance for either benefit"* (Dŵr Cymru letter of 5 March 2007). Dŵr Cymru considered that by changing from a "supplier" to a "common carrier *"the various services that were included in the bulk supply agreement would automatically have become unbundled"* (Dŵr Cymru letter of 5 March 2007). Dŵr Cymru added that "*whether or not such [stand-by and top-up] services would have been negotiated as part of the access agreement (and therefore a single pricing arrangement), or as separate agreements is not known*. *However, Dŵr Cymru's preference at the present time would be for different services to be priced separately (whether as a single agreement or as separate agreements) because this provides transparency and offers better incentives*" (Dŵr Cymru letter of 5 March 2007, response to question 8).

5.52 The Authority asked Dŵr Cymru to clarify its view on the back-up supply in a letter of 14 May 2007 and at the tri-partite meeting held on 18 May 2007 (transcript page 96, lines 10 to 21). Dŵr Cymru clarified that its position was that whether or not the costs of the back-up supply were included in the FAP "*had not been clarified either way*" (letter of 15 May 2007, page 3) and "*we couldn't say*

either way" (transcript page 97, line 13). Dŵr Cymru added that "*given this uncertainty, and the context of this investigation, it is entirely correct for [the Authority's [Draft Assessment] to proceed on the assumption that the back-up was to have been provided within the scope of the FAP, especially in view of the strong indication from Albion that it wanted the back-up arrangements to continue*" (letter of 15 May 2007, page 3). Dŵr Cymru added that it had "*already explained that the [FAP] was "indicative" and that there is some uncertainty as to what functions it might have covered because negotiations never proceeded to the point where such matters were considered let alone agreed*" (page 5). Dŵr Cymru made the further point that "*if there is a question as to whether, on the balance of probabilities, [the back-up supply] would have been included [in the FAP], Dŵr Cymru's view in any case is that it is more likely that it would have been that that it would not. The essence of Albion's common carriage proposition, Dŵr Cymru believes, was […] to preserve as much of the existing arrangements as possible*" (page 5).

5.53 Dŵr Cymru made further points on the issue of whether the back-up supply should be included in the FAP in its letters of 23 May 2007 and 25 May 2007. In summary, Dŵr Cymru stated that the contemporaneous evidence "*strongly suggests that Albion [was] expecting the service to be bundled together with the provision of common carriage. We have acknowledged that there is some residual uncertainty, but on the balance of probabilities it is clear that the evidence points to inclusion, not exclusion*" (letter of 23 May 2007, page 5); and "*[T]he back-up supply is, as the name makes clear, insurance for the common carriage supply. In the present case, under the 1999 bulk supply agreement, Dŵr Cymru was obliged to provide a back-up supply of potable water […] There was no reason for Dŵr Cymru not to believe that such a back-up would also be required at the time when it quoted the FAP*" (letter of 25 May 2007, page 6).

5.54 On 6 June 2007, the Authority directly posed the following question to Dŵr Cymru: "[*I]f Albion had accepted the [FAP] of 23.2p/m*^{3} *(contained in Dŵr Cymru's letter of 20 February 2001 to the Authority) would Dŵr Cymru have provided the back-up potable supply as part of the common carriage arrangements?*" The Authority asked Dŵr Cymru to support its answer with contemporaneous evidence.

5.55 Albion responded on 7 June 2007 stating that "[*I]s it not reasonable for us to expect [the Authority] to lend far greater weight to contemporaneous evidence of this quality and clarity than to unsupported assertions of a very recent nature?*"

5.56 Dŵr Cymru responded on 12 June 2007 stating that "[*T]he short answer to the question is: yes, if Albion had accepted the [FAP], the back-up potable service would have been provided and its cost*

would have had to have been recovered from the revenues from the [FAP]" (page 1). Dŵr Cymru supported its answer as follows.

5.57 Firstly, Dŵr Cymru argued that as the back-up supply was already being provided to Albion under the SBSA Dŵr Cymru would continue to provide the back-up supply under the common carriage arrangements.

5.58 Secondly, Dŵr Cymru explained that the back-up supply costs around £300,000 per year according to the Authority's cost estimate (which Dŵr Cymru stated is too low). The SBSA included only two prices: a non-potable price of 26p/m^3 yielding around £1.8 million per year on a volume of 7000Ml/year; and a potable price of 59p/m^3 yielding around £15,000 per year on a volume of 25Ml/year. Dŵr Cymru argued that the cost of the back-up supply could therefore only be recovered through the non-potable price.

5.59 Thirdly, Dŵr Cymru pointed out that the SBSA included a clause (clause 1.7) allowing for a situation in which Albion obtained its own source of non-potable water. In Dŵr Cymru's view, had the access price been agreed Albion would have given notice that it had an alternative source of non-potable water and Dŵr Cymru would have been relieved of its non-potable supply obligations. However, Dŵr Cymru argued its obligation to provide the back-up supply of up to 8Ml/day would have continued under the SBSA. According to the terms of the SBSA, unless the parties were in mutual agreement that the SBSA should be terminated the obligation to provide the back-up supply would have survived the switch in Albion's non-potable supply from Dŵr Cymru's raw water source. Dŵr Cymru added that should that have happened, the cost of the back-up supply would not have been covered under the potable revenues from the SBSA and therefore the only way in which the costs of providing the back-up supply could have been covered was by means of the revenues from the FAP.

5.60 In a regulatory context, the Authority would not automatically require a back-up supply to be included in a common carriage access price. Both Albion and Dŵr Cymru appear to accept this point. The Authority considers that whether a back up supply should be included in a common carriage access price should be decided on a case-by-case basis; for example a back-up supply could be negotiated as a separate agreement.

5.61 The Authority's view is that the back-up supply was neither explicitly included in the FAP nor was it explicitly excluded. The main evidence for this uncertainty is as follows:

- In the draft common carriage agreement of 8 November 2000, Albion had included the back-up supply and Dŵr Cymru had deleted it. However, there was a meeting two days later when Malcolm Jeffery asked for the back-up

supply arrangements to continue and the meeting note said this was a matter for further discussion;

- The outcome of the meeting of 16 January 2001 was that Dŵr Cymru and Enviro-Logic were to pursue the issue of including the current SBSA provisions in the common carriage agreement; and

- The contemporaneous evidence suggests that there was some uncertainty over the FAP's status and that negotiations might have continued were it not for the Complaint. The Authority's letters of 1 March 2001 to Dŵr Cymru and Enviro-Logic and of 16 March 2001 to Enviro-Logic asked the parties to continue to negotiate.

5.62 Given the uncertainty, it would be reasonable to assume that the costs of the back-up supply were implicitly included in the FAP in 2000/01 for the following reasons:

- The back-up supply was "bundled" into the existing SBSA price in 2000/01 and Albion responded on 20 October 2000 to Dŵr Cymru's Network Access Questionnaire that it wanted contingency supply arrangements under common carriage to continue "*as at present*".

- There is no convincing evidence to support: (1) Albion's claim that it was clear to all parties that the back-up supply would have been included as part of a separate potable bulk supply agreement with Dŵr Cymru; or (2) the possibility Dŵr Cymru mentions (but dismisses) of the back-up supply continuing as part of a potable-water-only-SBSA without the costs of the back-up supply being paid for by the revenue accruing from the FAP.

- Dŵr Cymru's original calculation of the FAP was based on an allocation of average revenues (see paragraph 254 of the Decision) used as a proxy for Dŵr Cymru's average costs, which include all costs including those of the back-up potable supply to Shotton Paper. In this way, the distribution cost of the back-up potable supply was implicitly included in Dŵr Cymru's calculation of the FAP (because Dŵr Cymru read-across the costs of potable bulk distribution to non-potable bulk distribution). There was no explicit allowance for the back-up supply in Dŵr Cymru's calculation of the FAP because there was no explicit costing of any particular element of the Ashgrove supply as it was based on an AAC methodology.

5.63 Whilst the Authority's view is that in this particular case it would be reasonable to assume that the costs of the back-up supply were included in the FAP, the Authority has costed the back-up supply

as a separate element of the FAP so that the impact it makes on the level of the FAP can be seen.

Inclusion of the back-up supply in the three methodologies

5.64 In the Authority's "AAC-plus" model used in the Referred Work, the Authority has disaggregated costs further than in the AAC model used by Dŵr Cymru to calculate the FAP and has not read potable bulk distribution costs over to non-potable bulk distribution as Dŵr Cymru did. In light of the preceding arguments and evidence, therefore the Authority has decided to include the Ashgrove-specific cost of the back-up supply in the "AAC-plus" model.

5.65 The LAC model includes the back-up supply because it is an Ashgrove-specific service which, based on the analysis above it is reasonable to assume was included in the FAP.

5.66 There is a case for excluding the back-up supply from a pure LRIC model as the Authority acknowledged at the tri-partite meeting (transcript page 3, lines 3 to 13). The Authority has not included the cost of the back-up supply in its LRIC methodology. However, when setting an access price based on LRIC it might be sensible to add on the cost of back-up supply to ensure full cost recovery (subject to the Authority's comments at 5.60). Dr Marshall recognised the need for a mark-up on LRMC-based prices to ensure full cost recovery in her first report (page 69).

5.67 **Common carriage services:** Common carriage services are services required by virtue of setting up a common carriage arrangement. Whether there was agreement on what these common carriage services were in 2000/01 is disputed by the parties. At the tri-partite meeting held on 18 May 2007, Albion accepted that there were not "*settled and detailed agreements covering every aspect*" of the mechanisms for common carriage at the time the FAP was offered (transcript page 15, lines 1 to 3) but Albion implied that "*sufficient principles had been agreed, that would have enabled Dŵr Cymru to have created a realistic [FAP]*" (transcript page 15, lines 5 to 7).

5.68 Dŵr Cymru's view was that "*[T]he exchanges in 2000/01 did not get to grips with the issues that distinguish common carriage from ordinary water supply […] let alone approach any kind of agreement*" (letter of 15 May 2007, page 1).

5.69 The extent to which common carriage services should be included in the FAP is a difficult question because that is in dispute by the parties, there is no precedent of common carriage in the water industry and because some of the services should arguably be charged for separately. However, in terms of their proportion of the overall costs, common carriage services are relatively small (see Section 6(B)(2)).

5.70 On 12 February 2007, the Authority asked (in its draft information requests) the parties what services in addition to partial treatment and transportation were planned under the proposed common carriage agreement in 2000/01. Following clarification at the 20 February 2007 tri-partite meeting, the Authority repeated this question in modified form in its final information requests of 27 February 2007.

5.71 In its reply of 12 March 2007, Albion stated that there was an agreement on the services required at the relevant time. Albion stated that the requirement for customer services was minimal and that an annual figure of £1,000 should be sufficient to cover all common carriage customer services costs.

5.72 In Dŵr Cymru's letter of 26 March 2007, Dŵr Cymru stated that in March 2001 at the time of the FAP, Albion had not set out its common carriage requirements or how common carriage might have worked. Dŵr Cymru stated that negotiations had not actually commenced on how common carriage would actually work. However, at the Authority's request, Dŵr Cymru provided a "thumbnail sketch" of a relatively simple set of potential common carriage arrangements including the following items: connection, negotiation, management and operation of the system, billing and Albion-specific customer management. In a letter of 11 May 2007, Dŵr Cymru added the item of a system for dealing with "unders and overs".

Table 2 – The Authority's view of what common carriage services should be included in the FAP

Item	The Authority's view of whether it is a common carriage service that should be included in the FAP
Connection infrastructure	No. If there were any such connection costs they would probably have been charged for separately to the FAP.
Negotiation costs	No. Dŵr Cymru's letter of 20 February 2001 implied that these costs would be charged for separately.
Management and operation of the system	Yes. Albion would require Dŵr Cymru to manage how the common carriage arrangements affect the system.
Unders and overs	Yes. The initial set up costs of a system of unders and overs might well have been included in the FAP.
Billing, customer services	Yes. Both parties agree Albion would have required common carriage customer services, although they disagree on the scale of these services and the associated costs.
Albion-specific customer service	Unclear. The Authority's view is that on balance in 2000/01 Dŵr Cymru could have included an allowance for Albion-specific costs in the FAP, but any costs beyond a reasonable level could have been charged for separately.

5.73 **Connection costs:** The issue of connection charges has arisen because at the tri-partite meeting held on 20 February 2007, Dŵr Cymru commented that it might be not be prepared to relinquish some of its rights to the water procured under its bulk supply arrangement with United Utilities, which includes the water currently provided to Shotton. The Authority questioned Dŵr Cymru about this comment in its letter of 27 February 2007. Dŵr Cymru replied on 5 March 2007 that "*whether or not Dŵr Cymru would be willing to relinquish some or all of its rights under its agreement with United Utilities in respect of Heronbridge would depend on a careful re-evaluation of its wider strategic water resource position in that part of its appointed area. Further, even in the event that it did not wish to relinquish any of its rights, it is not inevitable that it would continue to require the Ashgrove system for the use of that water, though this, too, would require careful analysis."* Dŵr Cymru further stated that *"[I]f [Dŵr Cymru] did continue to require use of the Ashgrove system for that water, it is clear that the system would, as a consequence have no spare capacity […]. In such circumstances, capital expenditure would be required in order to provide the necessary infrastructure to accommodate Albion's water*" (answer to question 11).

5.74 In its letter of 26 March 2007, Dŵr Cymru stated that a cost relating to the proposed common carriage arrangements with Albion in 2001 was the cost of "*a connection to be made from Albion's supply into the Network Operator's system*." Dŵr Cymru suggested this could be by means of "*a short length of pipe, together with a throttle valve and a meter to record inflows, both connected to/controlled from the Bretton control room by means of telemetry*."

5.75 Dŵr Cymru added in a letter of 11 May 2007, that "*[E]ven if there is some uncertainty as to whether a separate connection would have been required, for the purposes of an excessive pricing test the costs of making and maintaining that connection should be included as it is not unreasonable to assume that it would have been needed*" (page 8). Dŵr Cymru added in a letter of 15 May 2007 that "*the reason why issues such as Albion's connection into Dŵr Cymru's supply system were not the subject of significant exchanges in 2000/01 is plainly because the discussions that did take place were very preliminary*" (page 2). At the tri-partite meeting held on 18 May 2007, the Authority asked Dŵr Cymru exactly what point it was making in relation to the FAP by stating that it might not have relinquished some of its rights to the Heronbridge water. Dŵr Cymru clarified that the effect of not relinquishing its right would be that there would be a connection cost which should go into the FAP (transcript page 100, lines 2 to 8).

5.76 Dŵr Cymru set out its position most clearly in a letter of 23 May 2007 (page 6) stating as follows: "*[D]ŵr Cymru had not made a decision to relinquish any of its rights under the agreement [with United Utilities] […] This means that had [Albion] obtained 22 Ml/d from United Utilities or elsewhere (and noting that United Utilities confirmed that this could be supplied in addition to the 36 Ml/d contracted to Dŵr Cymru), that water could not be abstracted through the three Dŵr Cymru pumps, and thereby flow straight to the point of connection between the two undertakers' mains. As a consequence, Albion would either have to have built its own pumping facility, or negotiated with United Utilities to use part of theirs. Either way, a connection to deliver Albion's water into the pipe that transport*s *water from Heronbridge to Ashgrove would therefore have been required*." In a letter of 25 May 2007, Dŵr Cymru stated that the Authority had been aware in March 2001 that Dŵr Cymru might not be willing relinquish its rights to water at Heronbridge.

5.77 Albion's view is that Dŵr Cymru's point about connection costs "*was never voiced in discussions at the time and appears to be another new straw to which Dŵr Cymru are attempting to cling and which lacks any contemporaneous supporting evidence*" (letter of 8 May 2007, page 7). Albion added that "*[A]lthough I believe this line of argument from Dŵr Cymru to be a red herring, the Decision (at*

paragraph 136) confirms that there would have been sufficient water available from United Utilities, even if Dŵr Cymru wanted to retain their bulk supply agreement with United Utilities" (third letter of 21 May 2007, page 3). Albion further stated on the issue of Dŵr Cymru's water rights "*[I]t is not clear what Dŵr Cymru is seeking to achieve with a line of argument that has not previously been put before the Tribunal*" (first letter of 30 May 2007, page 2).

5.78 In theory, if Dŵr Cymru had decided not to relinquish some of its rights to the water procured under its bulk supply arrangement with United Utilities and the associated United Utilities' water abstraction infrastructure in 2000/01 it might have led to a connection having been required from Albion's water source into Dŵr Cymru's supply system. Such a connection would have involved costs to Dŵr Cymru which could at least in theory have been charged through the FAP or a separate connection charge.

5.79 The Authority considers that there is uncertainty about whether a connection would have been required in 2000/01. As Dŵr Cymru acknowledges the issue of connection charges "*were not the subject of significant exchanges in 2000/01*" and the parties are currently in dispute over whether a connection would have been required. However, the Authority does not need to resolve this issue for the Referred Work as what matters is whether a connection cost could reasonably be included in the FAP. The Authority's view is that connection charges should not be included as a cost underlying the FAP as in practice if such charges had been payable they would most probably have been made as a one-off upfront charge rather than as part of the FAP.

5.80 **Negotiation costs:** Albion in a letter of 8 May 2007 (page 6) accepted the Authority's preliminary view in the Draft Assessment that there will be negotiation costs involved in setting up a common carriage agreement, but that such costs should be charged for separately to the FAP. Albion added that its "*expectation was that each party would bear their own costs*" on the basis that each party had borne its own costs in the negotiations related to Albion's inset appointment (letter of 30 May 2007, page 2). Dŵr Cymru wrote in a letter of 25 May 2007 that "*[T]here is no evidence that either party was expecting negotiation costs to be recovered separately from the FAP*." However, Dŵr Cymru's letter of 20 February 2001 to the Authority states:

> "*The price that we are minded to charge Albion Water for the services requested is 23.2p/m^3. This is the 2000/01 price.*
>
> *This price does not include charges pertaining to the application; whilst we have made no charge up to this point for the administration and other costs associated with this application if we envisaged significant costs being incurred in the future then*

these would be at the expense of the entrant, in accordance with [the Authority's] directives."

The above letter states that application costs up to 20 February 2001 were not included in the FAP. On that basis, the Authority's view is that negotiation costs should not be included in the FAP.

5.81 **Management and operation of the system**: The Authority's view is that the common carriage arrangements in 2000/01 would have involved some more operational complication than the existing wholesale arrangements. Some allowance for this service should be included in the FAP.

5.82 **Unders and overs:** The Authority asked for the parties' views on "unders and overs" in its information requests of 27 February 2007. The Authority defined "unders" or "under-supply" as when the water inputted by Albion to the Ashgrove system would have been insufficient to cover Shotton Paper's requirements. The Authority defined "overs" or "over-supply" as when the water inputted by Albion to the Ashgrove system would have been greater than Shotton Paper's requirement. "Unders and overs" are different to the back-up supply as they can occur often and usually involve relatively small amounts of water. The back-up supply is used for system shut downs or to cover large amounts of under supply and the Authority expects this would be used infrequently.

5.83 Albion replied in a letter of 12 March 2007 that there was an agreed operational and service basis for the common carriage proposal in 2001 which "*avoided issues of "unders and overs"* ".

5.84 Dŵr Cymru replied on 26 March 2007 that Albion had not specified how common carriage might have worked or what Albion's realistic common carriage requirements might have been. However, Dŵr Cymru agreed to provide a "thumbnail sketch" of how the common carriage arrangements might work. On the issue of "unders and overs" Dŵr Cymru considered that as the network operator under common carriage it would prepare a daily statement of "unders and overs". The entrant and network operator would then settle outstanding balances regularly on the basis of an agreed schedule of prices. It appears to the Authority that Dŵr Cymru is suggesting that the charges for "unders and overs" would be calculated separately from the FAP.

5.85 The Authority's view as expressed in its "*Access codes for common carriage*" March 2002 was that charges for top-up supplies should be made according to standard tariffs if the top-up supplies were made on a continuing or regular basis. However, if the entrant's water supply led to a greater than normal variation in the demand for the incumbent's resources then such arrangements might be more like a standby facility and charges should be made on that basis (section 2.2.4). In the Authority's September 2006

Access Codes Guidance[13], the Authority states that "*[W]e expect water undertakers and licensees to agree case-specific arrangements in access agreements on how to balance water flows over time. […] However, water undertakers should specify in their access codes which of the following would be included in access agreements: […]*

- *reconciliation of input and demand at periods agreed between the water undertaker and the licensee*

- *financial adjustments for over-supply and under-supply as agreed between the water undertaker and the licensee*" (page 43).

5.86 From the above quotes, it is clear that the Authority has considered "unders and overs" to be an issue to be addressed as part of a common carriage access agreement. The Authority's 2006 guidance suggests charges for "unders and overs" should be made through financial adjustments rather than the access price. Dŵr Cymru appears to suggest the same treatment of "unders and overs" in its letter of 26 March.

5.87 In the Draft Assessment sent to the parties on 3 May 2007, the Authority's preliminary conclusion was that "unders and overs" were an issue which needed to be addressed in the common carriage arrangements between Albion and Dŵr Cymru in 2001; but that the costs should not be included in the FAP, but charged for separately.

5.88 In its first letter of 8 May 2007, Albion argued that under supply could not arise under the proposed common carriage arrangements in 2001 because *"[A]lbion is not making inputs to the system. It is paying United Utilities for the water actually delivered to the Shotton Paper site. For the same reason it is not possible to "over supply"* " but Albion considered this was an academic point given *"[the Authority's) current view that any such costs will be dealt with separately*" (page 6). The Authority does not agree with Albion's view that under and over supply could not occur simply because Albion is buying the water from United Utilities. "Overs and unders" could still occur but who takes responsibility for managing them would depend on the contract between Albion and United Utilities for the water supply.

5.89 In a letter dated 11 May 2007, Dŵr Cymru made the point that "*there is an important distinction to be made between the costs of setting up and operating that system (which are unavoidable) and the financial payments which are made pursuant to that system (whether they go one way, the other way or net to zero) […] the*

[13] For the avoidance of doubt, the 2006 Access Code Guidance relates specifically to the new statutory Water Supply Licensing ("WSL") regime, brought in under the Water Act 2003 (the relevant sections of which entered into force in December 2005). The common carriage arrangement which forms the subject of the Decision and the Referred Work is entirely distinct from WSL arrangements. The use of the 2006 Access Code Guidance here is merely illustrative.

necessity of the system [of "unders and overs"] under a common carriage arrangement is indisputable, and the costs should be included" (page 9).

5.90 The Authority stands by its position in the Draft Assessment that "unders and overs" were an issue which needed to be addressed in the common carriage arrangements between Albion and Dŵr Cymru in 2001; but that the costs should be charged for separately and not included in the FAP. However, the Authority accepts Dŵr Cymru's submission that some allowance for setting up a system of "unders and overs" should be included in the FAP.

5.91 **Customer services**: The parties agree that Albion would have required some common carriage customer services in 2000/01 although they disagree on the scale of these services and the associated costs. The Authority's view is that these common carriage customer services should be included in the FAP.

5.92 **Albion-specific customer services:** In the Draft Assessment of 3 May 2007, the Authority took the preliminary view that whilst Dŵr Cymru might have expected that Albion would have been a "high maintenance" customer to deal with in a common carriage arrangement in March 2001, the Authority did not consider that a forward-looking access price at that time should have taken this into account. However, the Authority considered in the Draft Assessment that it might have been reasonable for Dŵr Cymru to make a provision in the common carriage arrangements for charging Albion for any costs incurred beyond a specified reasonable level.

5.93 In its first letter of 8 May 2007, Albion stated "*[W]e agree with [the Authority's] suggestion in dealing with alleged "high maintenance costs", whilst reminding ourselves that Ms Cross' witness statement contradicts Dŵr Cymru's most recent view that there were such costs*" (page 6).

5.94 Dŵr Cymru took issue with the Authority's preliminary view in its letter of 11 May 2007. Dŵr Cymru stated that the Authority's position in the Draft Assessment "*may be a valid view for the purpose of tariff-setting in certain contexts, but it cannot be the right approach in the context of carrying out an excessive pricing test, because it explicitly omits costs which [the Authority] acknowledges Dŵr Cymru legitimately expected to incur*" (page 9). Dŵr Cymru responded to Albion's first letter of 8 May 2007 in a letter dated 15 May 2007 as follows, "*it is suggested that I stated in my witness statement in 2004 that [Albion] was not a "high maintenance" customer. However, I did not say this, nor did I believe it to be the case at the time, since the level of interaction between [Albion] and Dŵr Cymru has always been higher than the average level of interaction with large customers, albeit that*

qualitatively the issues that gave rise to that interaction are broadly similar" (page 9).

5.95 In subsequent correspondence, Albion maintained its position in its third letter of 16 May 2007 and its first letter of 30 May 2007. Dŵr Cymru maintained its position in its letters of 25 May 2007.

5.96 The Authority's view is that, following the parties' comments on the Draft Assessment, on balance in 2000/01 Dŵr Cymru could have included an allowance for Albion-specific costs in the FAP. The more frequent and detailed interaction Dŵr Cymru had experienced with Albion compared to its large user customers up to March 2001 effectively represented a higher level of customer service than is typical and which Dŵr Cymru could have legitimately expected to continue into the future in March 2001. However, this conclusion is made in the specific context of an excessive pricing test and does not serve as a precedent for regulatory tariff setting where large users' contributions to appointed water companies' customer service costs are not based on the specific amount of that service they use. Moreover, the Authority stands by its position in the Draft Assessment that it might have been reasonable for Dŵr Cymru to make a provision in the common carriage arrangements for separately charging Albion for any costs incurred beyond a specified reasonable level.

Other issues raised by the parties relevant to the services required

5.97 **Leakage:** Dŵr Cymru raised the issue of leakage in its letter dated 26 March 2007. Dŵr Cymru suggested that one approach would be to require the entrant to input into the network operator's system only the amount of water the customer uses with no allowance for leakage. The network operator would then provide the water to cover the leakage and charge for it through a higher access price or through some other arrangement.

5.98 In the Draft Assessment, the Authority stated that the contemporaneous evidence was unclear about how leakage was to be treated under the common carriage arrangements in 2001. At Annex C to Albion's letter of 12 March 2007, Albion appended a note of a meeting on 16 January 2001 between Dŵr Cymru, Enviro-Logic and North West Water. On leakage the note stated "*[I]SSUE 4 [North West Water] would like the licence obligations for leakage to be made explicit in any future agreements. [Dŵr Cymru] to consider."*

5.99 At the tri-partite meeting held on 18 May 2007, Albion made the following statements about leakage:

> "*Dr BRYAN: […] Leakage, 5.58: contemporaneous evidence is unclear about how leakage was to be treated. It is not at all unclear. It is extremely clear. The issue is that leakage would*

be borne by [Dŵr Cymru], in the sense that the gross supply at Heronbridge was measurable; the net supply to Shotton Paper was measurable; as was the net supply to Corus. The balance, leakage or other operational losses, would be down to [Dŵr Cymru]. Where there was an issue, which is made clear by Roddie Munro's email [of 29 January 2001], that is appended to that small bundle [attached to Albion's letter of 12 March 2007], is how the cost element for that leakage should be embedded within the First Access Price, remembering at that point we haven't got the detail of the price or we were still looking for justification of it. Our view was that site-specific leakage was perhaps more -- I think it was -- more appropriate than a regional average, or maybe it was vice versa. But it was not how leakage would be measured or who would be responsible for it. It was very much a case of --

MR MUSCO: They paid for it.

DR BRYAN: -- the cost of that leakage would be paid for in the First Access Price" (transcript page 36, line 12 to page 37 line 8)."

5.100 Albion accepts that the cost of leakage should be included in the FAP. In addition, the e-mail sent by Roddy Monroe of Enviro-Logic on 29 January 2001 to Dŵr Cymru asked for leakage to be based on the actual leakage of the system which Roddy Monroe believed "*to be far below the [the Authority] economic target for the company as a whole*."

5.101 The Authority's view is that there should be no additional charge for leakage in the FAP. The reason for this is that in the Authority's methodologies and in Dŵr Cymru's original AAC justification of the FAP, the costs of the services that Albion would require are divided by the amount of water delivered to non-potable customers/Shotton Paper, not by the volumes abstracted in order to serve non-potable customers/Shotton Paper. As a result the volumetric rate resulting from the Authority's methodologies and Dŵr Cymru's original AAC justification already includes the costs of the additional water abstracted which is required to account for supply system leakage on the way to Shotton Paper.

5.102 **Purchase of the Ashgrove system by Albion:** At the 20 February 2007 tri-partite meeting, Albion raised the future possibility of serving both Shotton Paper and Corus through the Ashgrove system. In the information requests of 27 February 2007, the Authority made clear that this future possibility was not relevant to the Referred Work and therefore, in the context of the Referred Work, asked the parties not to provide information on it.

The Authority's conclusions on what services were included in the FAP

5.103 The Authority's conclusion is that the following services were included in the FAP:

- Transport of Albion's water via the raw water aqueduct from Heronbridge to the Ashgrove WTW.
- Partial water treatment of Albion's water at the Ashgrove WTW.
- Disposal of the sludge created by partially treating Albion's water via a sludge main to the Chester STW.
- Transport of Albion's water via Dŵr Cymru's non-potable bulk distribution main from the Ashgrove WTW to the Shotton Paper site.
- Water system management of the Ashgrove system via water storage in the Corus lagoons.
- Operational Control of the Ashgrove system.
- A back-up supply for Albion's non-potable water supply to Shotton.
- Common carriage services (operational and customer services including a system for "unders and overs" and Albion-specific customer services).

5.104 At the tri-partite meeting held on 18 May 2007, Albion raised a concern about double-counting in the above list as it appeared at paragraph 5.61 of the Draft Assessment as follows:

> DR BRYAN: […] *I'm a little bit concerned, as well, in terms of the preliminary conclusions of the services 5.61, as to whether there may be double-counting. I'm looking particularly at the last and anti-penultimate bullet point in that list, operational control of the Ashgrove system, common carriage services, operational and customer services as to whether there is scope for double-counting there*" (transcript page 37, lines 9 to 16).

5.105 The Authority can clarify that the third from last bullet point refers to the operational control of the Ashgrove system as it was under the SBSA in 2000/01; the last bullet point refers to any *additional* operational costs that would arise from the common carriage arrangements.

Common costs applicable to the services required

5.106 At this point it is worth noting that the services Albion would have required from Dŵr Cymru for common carriage would have required Albion to make an appropriate contribution to Dŵr Cymru's common costs associated with those services. The main elements of common costs would be as follows: the rates attributable to the assets for which access was sought; a contribution to Dŵr Cymru's regulation costs; the scientific services associated with the partial treatment at Ashgrove; and a contribution to Dŵr Cymru's general and support expenditure costs.

5.107 The OFT defines common costs as follows "*common costs arise where two or more products are produced together even though they could be produced separately (at a higher overall cost*)" (page 33, OFT's draft competition law guideline for consultation "*Assessment of conduct*", April 2004, OFT 414a). It is cheaper for a new entrant to make a contribution to the network operator's common costs than for the new entrant to pay the standalone costs of the assets to which it requires access.

5.108 It is recognised in other industries that an appropriate contribution to the incumbent's common costs should be made in access prices. The Commission's *Telecommunications Notice* states that "*[A]ppropriate cost allocation is therefore fundamental to determining whether a price is excessive. For example, where a company is engaged in a number of activities, it will be necessary to allocate relevant costs to the various activities, together with an appropriate contribution towards common costs"* (paragraph 107, reproduced at paragraph 233 of the Decision). In addition, the OFT's guidance states that "*[W]here an undertaking produces several products, certain costs may be 'common' to more than one product. To assess the profitability of a line of business it may be necessary to allocate common costs to the particular activities identified. Whether and how this should be carried out will depend on the circumstances of the case*" (paragraph 2.13, OFT 414a).

5.109 Dŵr Cymru commented in its letter of 11 May 2007, that the common costs used by the Authority in the LAC model "*are only a subset of the common costs than an undertaker has to recover because of the particular legal and regulatory circumstances within which undertakers operate. Specifically, unlike the vast majority of companies to which the OFT guidance would apply, undertakers incur significant costs associated with a wide variety of obligations and functions which are either un-funded or only partially funded*" (page 10). Dŵr Cymru gave as an example of an unfunded obligation, the provision of the free meter option and as an example of a partially-funded obligation, the "universal service obligation" to provide a water supply service to all customers within an appointed water company's area, even if the revenue it recovers from certain

customers is not enough even to cover the incremental costs of providing the supply.

5.110 Dŵr Cymru acknowledges that in an AAC approach the costs of unfunded and partially-funded legal obligations are automatically shared between customers and customer classes.

5.111 Dŵr Cymru points out that the costs of unfunded and partially-funded legal obligations need to be included in the LAC for Dŵr Cymru to recover the revenue it needs to cover its costs. The Authority recognises that in a LAC approach there is more scope for "errors of exclusion". Dŵr Cymru recognises the difficulty of quantifying and allocating the costs of unfunded and partially-funded legal obligations. In the time available for the Referred Work, given all the other issues the Authority has had to investigate, the Authority has not had time to make what it would consider a sufficiently robust estimate of an allowance for a share of these costs. That is one of the reasons why the Authority is using the LAC methodology as a cross-check on the main "AAC-plus" methodology.

5.112 The costs of unfunded and partially-funded legal obligations should not be included in a pure LRIC model, although when setting an access price based on LRIC it might be sensible to add on such costs to ensure full cost recovery. Dr Marshall recognised the need for a mark-up on LRMC-based prices to ensure full cost recovery in her first report (page 59).

5.113 The Authority considers that under the proposed common carriage arrangements in 2001, Albion would have needed to make an appropriate contribution to Dŵr Cymru's common costs and those costs would have been attributable to the FAP.

6. WHY THE METHODOLOGIES HAVE BEEN CHOSEN AND SOME ISSUES COMMON TO SOME OR ALL OF THE METHODOLOGIES

6.1 In its Further Judgment, the Tribunal required the Authority to investigate further *"the costs reasonably attributable to the service of the transportation and partial treatment of water by Dŵr Cymru, generally and through the Ashgrove system in particular, together with the associated question of whether, in the light of those costs, the [FAP] was an unfair price within the meaning of the Chapter II prohibition"* (paragraphs 280 and 360).

6.2 The Tribunal also identified *"the main issue is "transportation" costs. Noting that "transportation costs, including any appropriate allocations, need to be distinguished from other costs currently included under the heading "distribution" costs. Costs relating to activities that are* ***not fairly referable*** *to the transportation of non-potable water, including but not limited to retail costs, need to be identified and excluded if appropriate. To have a full picture, transportation costs need, in our view to be established both on the basis of* ***an average for non-potable users*** *generally and as a cross-check, in relation to* ***the Ashgrove system****"* (paragraph 249 of the Further Judgment, emphasis added).

6.3 Under the Referred Work, the Authority is therefore investigating these costs and the associated question of whether, in the light of those costs, the FAP was an unfair price within the meaning of the Chapter II prohibition. The Authority is examining these costs in respect of three methodologies in response to the Tribunal's referral: an average accounting costs plus ("AAC-plus") approach; a long-run incremental cost ("LRIC") approach; and a local accounting costs ("LAC") approach – more accurately described as a local hybrid costs - approach. All three of these methodologies are more locally-cost based than the form of AAC methodology Dŵr Cymru used to calculate the FAP. The Authority's preferred methodology is the AAC-plus methodology which is the closest to that used in a regulatory context in 2000/01. The Authority has used LRIC and LAC as cross-checks on this methodology.

6.4 Dŵr Cymru has raised the issue that, although the Authority has disaggregated AAC further than is usual in regulatory practice in 2007 and used LRIC and LAC models to examine local costs, that does not mean that the framework of economic regulation in 2001 based on AAC should be disregarded (letter of 16 May 2007). The Authority acknowledges Dŵr Cymru's point but considers that the Tribunal required the Authority to disaggregate costs in the Referred Work further than was done in the AAC methodology in 2001.

6.5 Both Dŵr Cymru and Albion have raised the issue of why the Authority has not presented the results for various sensitivity checks on the three methodologies as suggested by the parties.

The Authority has not presented the results for the sensitivity checks suggested by the parties because it believes it is most appropriate to present the main results which are based on internally consistent data and assumptions. This also ensures that the Referred Work is entirely clear as to what are the Authority's findings, particularly in view of the length of the Final Report and accompanying annexes.

6.6 This section first provides an explanation of why and how the three methodologies are used in the Referred Work. The Authority's letters to Albion dated 20 March 2007 and 3 April 2007 and to the parties dated 17 April 2007 provided an earlier outline of the Authority's thinking on the methodologies.

6.7 This section then goes on to explain the Authority's approach to three particular issues common to some or all three methodologies: the cost of capital; costing the common carriage services and costing the potable back-up supply.

A. Why the three methodologies have been chosen

(1) Average Accounting Cost (AAC) Plus Methodology or "AAC-plus"

6.8 An AAC methodology investigates from a top-down regionally-averaged start point, moving through layers of "granularity". The Authority is using a form of AAC methodology as its principal methodology in the Referred Work for several reasons: (1) AAC was the methodology Dŵr Cymru actually used to set the FAP in 2001; (2) in MD163 of 30 June 2000, accounting costs were one of the three main ways of setting access prices the Authority referred to; (3) the AAC approach provides insight into the regulatory price level, the approach that is traditionally used in the water industry to set non-discriminatory (retail) prices for different customer classes.

6.9 However, in comparison with the AAC methodology used in the Decision, the adapted version now being applied in the Referred Work is better described as an "**AAC-plus**" methodology. This reflects a greater level of granularity of the costs associated with common carriage, with the aim of identifying in more detail the components of the costs, to take account of the Tribunal's comments set out below. The Authority has emphasised in correspondence with the parties that the AAC-plus methodology used in the Referred Work is more locally-cost based than the AAC methodology used by Dŵr Cymru to calculate the FAP.

6.10 In its Refusal Judgment, the Tribunal stated at paragraph 52 that *"…[I]t has not found that "it is unlawful to price on an averaged basis"…. What the Tribunal has found is that, if prices are arrived at on an average accounting cost basis, it should nonetheless be possible to verify the costs in question or at least identify the components of costs, at least on an estimated basis."*

6.11 Similarly, at paragraph 45, the Tribunal stated that, "…*what the Tribunal has found, at paragraph 470 of the judgment of 6 October, is that if a "top-down" approach is used, the costs in question should be capable of being verified*…" and it went on to hold that, *"On the other hand, the Tribunal also accepted, at paragraph 605, that it would still be necessary to use company-wide average figures to a large extent."*

6.12 The Authority considers that the "AAC-plus" methodology it is using will be relevant to the questions of whether the FAP was excessive and whether it was unfair. The second limb of the *United Brands* test is "*whether a price has been imposed which is either unfair in itself or when compared to competing products*." As discussed in the section on comparators (Section 12), there are very few, if any, prices for competing products to which the FAP can be compared. However, as AAC provides insight into the regulatory price level, which, as mentioned above, is traditionally used in the water industry for setting for different customer classes' non-discriminatory (retail) prices, the FAP can be compared to the prices of all Dŵr Cymru's other tariffs through the AAC-plus methodology. The AAC-plus model allocates costs to different customer groups to ensure that tariffs are cost reflective. It therefore produces an estimate of the FAP which is consistent with Dŵr Cymru's other prices and which in that respect is fair.

6.13 In the AAC-plus methodology, the Authority addresses a preliminary point on the services received by non-potable customers. The supply arrangements for the non-potable customer class in Wales are unique. No other customer class in England or Wales is supplied via a series of discrete water supply systems. This may reflect the particular geography and industrial/water industry history of Wales.

6.14 It is evident that the supply arrangement of each non-potable system is slightly different. However a number of broad generalisations can be drawn that are explained more fully in Section 7 below.

6.15 For this work, only those activities required for common carriage on the Ashgrove system are included as costs that can be defined as "attributable". Under the common carriage proposal, retail customer service costs are replaced by common carriage customer service costs.

6.16 Albion has criticised what it considers to be the lack of information provided on the AAC-plus model throughout the Referred Work (for example letters of 8 May 2007, 21 May 2007 (first letter), 24 May 2007 and 30 May 2007). Dŵr Cymru has stated that it believed all of the material that is necessary to understand and comment upon the Authority's AAC-plus methodology had already been made available to the parties (letter of 31 May 2007). The Authority

considers that it has provided all the information Albion needs in order to comment sensibly on the AAC-plus methodology as set out in Section 7.

6.17 Dŵr Cymru considered that the Authority had correctly given primacy to the AAC-plus methodology in the Draft Assessment because prices derived from an AAC methodology are consistent with prices charged to other customers and other customer classes in the water industry (letters of 11 May 2007 and 25 May 2007). However Dŵr Cymru considered that the Authority's AAC-plus methodology had modified AAC in such a way that it systematically produces results that are under-estimates of average costs (letters of 11 May 2007 and 25 May 2007); this is addressed in Section 7 below.

(2) Long Run Incremental Cost (LRIC) Methodology

6.18 The Authority is using LRIC as a cross-check against the main AAC-plus methodology. Essentially the LRIC methodology is concerned with pricing signals to customers and water efficiency. The Authority considers LRIC is an appropriate method to cross-check the AAC-plus methodology for the two reasons set out below.

6.19 Firstly, LRIC is a close relative of the long-run marginal cost ("LRMC") methodology.[14] LRMC has been used by the Authority for other regulatory purposes (and in relation to the previous "minded" determination of the SBSA)[15]. LRMC was one of the methodologies referred to in MD163 "*Pricing Issues for Common Carriage*" of 30 June 2000, which set out the Authority's views on access pricing relevant to the period when the FAP was offered by Dŵr Cymru i.e. in March 2001.

6.20 Secondly, LRIC/LRMC is an acknowledged methodology and has been widely used by other regulators in other industries such as telecommunications, electricity and gas. Dr Marshall advocated the LRMC approach to access pricing used in the gas industry in her first report stating that "*[I]t was generally agreed that the guiding principle in determining a new structure of charges should be to allocate resources efficiently by ensuring that a price charged to a customer or customer group covered the costs that could be directly attributed to that customer or group. Therefore, it was*

[14] The Authority is aware of the Tribunal's comment, in relation to the separate question of whether the Authority will undertake a s.40 WIA 1991 determination of the SBSA price (i.e. using its bespoke regulatory powers under that Act; the SBSA price has never been the subject of an investigation under the 1998 Act) that *"[I]t is […] not clear that LRMC should play a prominent, or indeed any, part in the forthcoming determination of the Bulk Supply Price"* (paragraph 272 of the Further Judgment). The Authority does however note that the Tribunal did not hold that LRMC (or the closely related LRIC) should not be used in the Referred Work.

[15] MD170 *"The Role of Long Run Marginal Costs in the Provision and Regulation of Water Services"* dated 8 May 2001 explained the Authority's views on the relevance of LRMC in water service provision and in regulatory policy (including its relevance for water resource planning, security of supply, large user tariffs, leakage control and access pricing).

agreed that Transco's charges should be based on long run marginal cost (LRMC)" (page 58).

6.21 There has been some misunderstanding of how LRIC works. Albion questioned the Authority's use of an LRIC methodology in its letter of 18 April 2007 when it stated "*[O]n its face, it would appear that [the Authority's] approach to LRIC has been based on a fundamental misunderstanding of the facts. There is no requirement or justification for considering any extension or enhancement to the Ashgrove system to meet existing or anticipated demand from Albion*". The Authority explained in the Draft Assessment and at the tri-partite meeting held on 20 February 2007 that an LRIC estimate can be made for increments or decrements to demand, small or large or even none. However, the LRIC methodology requires that one looks at an increment on the underlying demand situation. Therefore, using the LRIC methodology does not require that demand was expected to rise.

6.22 The Authority has used a "pure" or "textbook" LRIC model in the Referred Work. The LRIC methodology starts from an understanding of the existing maximum daily peak capacity of the different non-potable infrastructure elements (water pumping, raw water aqueducts, water treatment, water storage and water distribution mains) and the associated peak daily demands of customers located on the supply system. Given the annual average water demand of customers supplied (in the selected year), for a given selected increment (or decrement) in water demand, the LRIC methodology calculates the associated unit capital and operating costs of supplying this additional volume of water. The LRIC model used by the Authority investigates whether it is cheaper to meet the proposed demand increment by:

a) expanding the capacity of the existing non-potable water supply system; or

b) constructing a supporting parallel supply system.

6.23 The LRIC model will therefore provide an indication of the least cost path to manage any proposed demand increment.

6.24 The Authority's LRIC model is "pure" in the sense that it is close to the textbook model of LRIC by estimating the cost of supplying an increment in demand. As a result, it excludes costs such as the back-up supply and common costs which do not vary with the increment in demand.

6.25 Dŵr Cymru has raised the point on several occasions that the Authority should use its LRIC estimate as a lower bound on a price and that standalone costs should be used as an upper bound. Dŵr Cymru emphasised LRIC should be regarded as a floor above which an actual price should be set as distinct from a level

sufficiently above which a price might be regarded as excessive (letter of 11 May 2007, second letter of 23 May 2007 and third letter of 25 May 2007). The Authority notes that in this Final Report the LRIC estimate is higher than the AAC-plus and LAC estimates and as a result has not proven to be a lower bound in the Referred Work.

6.26 Nevertheless, the Authority considers that the LRIC estimates need to be used with caution in the context of an excessive pricing test as pure LRIC estimates might not lead to full cost recovery. As Dr Marshall stated in her first report "*[L]ong run marginal costs will not sum to the transportation business's total allowed revenues because some costs will be unattributable to particular customers or particular customer groups. So there will be a gap between marginal and average costs, (sic) There is considerable disagreement on the best 'mark up' method to apply to attributed costs (as the ECPR controversy testifies) in order to reach prices that satisfy the overall revenue requirements for the regulated business's financial viability*" (page 59).

6.27 It is a point that the Authority has acknowledged before in MD170, *"The Role of Long Run Marginal Costs in the Provision and Regulation of Water Services"*, 8 May 2001, where the Authority stated on page 7 of Annex A to MD 170 the report "*the link between LRMC and volumetric rates should not be seen as mechanistic. In particular, there may be good reasons for volumetric rates to exceed LRMC if the latter is very low compared to average accounting costs*". However, in this particular case the LRIC estimate has not proven to be "very low" compared to the AAC-plus estimate.

6.28 At the tri-partite meeting held on 18 May 2007, the Authority acknowledged Albion's point that a pure LRIC model would not include the costs of the back-up supply if they were unaffected by the increment in demand. The Authority did however state that when setting an access price based on the LRIC methodology it would seem sensible to add on the cost of the back-up supply to ensure full cost recovery (see transcript page 3, lines 3 to 13).

6.29 The Authority has investigated the impact of different demand increments in the LRIC model. Albion has raised concerns about the demand increments the Authority chose of 20% and 50% in the Draft Assessment and preferred increments of 0% or 10%. As explained above, the LRIC model requires that there is some increment even if the underlying demand is stable so a 0% increment is not feasible. In order for LRIC to produce plausible results for charging purposes there needs to be some form of capital investment. The Authority recognised this in Report C attached to MD170 dated 8 May 2001 where it stated "*[T]he forward looking approach [to estimating LRMC] in such a case [where a company has spare capacity] may require the company to*

estimate the demand increment required to cause a company to undertake additional investment ". The Authority has focused on 20% as a reasonable size of the increment (i.e. large enough to stimulate expansion investment but not so large that it necessitates large-scale infrastructure duplication). The choice of increment in the Final Report is discussed in Section 8.

(3) Local "Accounting" Cost (LAC) Methodology

6.30 In its earlier judgments, the Tribunal indicated that it would like to see evidence of local accounting cost information as a cross-check in relation to the regionally averaged price. At paragraph 44 of the Refusal Judgment, the Tribunal summarised its position, "*[I]t was in those circumstances that the Tribunal sought to obtain a better understanding of the actual costs of the Ashgrove system, as a cross-check*."

6.31 In particular, as noted previously, the Tribunal has been clear that it does not oppose the use of regionally averaged prices as a methodology, but that these costs must be subject to verification, and that "bottom-up" costs are one approach that could be used to provide that check: "…*the Tribunal has not said that a "top-down" approach is improper, or that "bottom-up" is the required method; only that there must be some appropriate verification of the costs relied on*"… "*the Tribunal found that a "top-down approach" is not objectionable as such, merely that such an approach needs to be subject to appropriate verification, and that a bottom-up approach is one way of providing that verification*."(Paragraph 44 of the Refusal Judgment and paragraph 43 of the Refusal Judgment).

6.32 The Authority is therefore investigating additional and supplementary local cost information as a cross-check in relation to the preferred AAC-plus model.

6.33 The local costs methodology aims to calculate Dŵr Cymru's local costs for the raw water aqueduct, the partial treatment, distribution and storage functions associated with the Ashgrove system. In particular noting the Tribunal's statement, referred to above (paragraph 52 of the Refusal Judgment), that *"…[it] has not found that "it is unlawful to price on an averaged basis*"…. *What the Tribunal has found is that, if prices are arrived at on an average accounting cost basis, it should nonetheless be possible to verify the costs in question or at least identify the components of costs, at least on an estimated basis*" (emphasis added), the Authority considers that a more appropriate terminology for LAC used in the context of the Referred Work is Local Hybrid Costs for the reasons set out below.

6.34 LAC is not a methodology that the Authority has traditionally employed in a regulatory context as it regulates prices and tariffs on a regionally averaged basis. (Outside the regulated sphere, a

local “accounting” cost methodology is generally based on “bottom-up” local accounting data, where this exists.)

6.35 Where the parties have informed the Authority that local accounting cost information is not available, the Authority has requested the parties to provide justifications of why they have proposed certain assumptions, and it is at least theoretically possible to assess various assumptions. The Authority has also used alternative local cost estimation techniques.

6.36 For reasons of consistency in relation to the investigation to date, and simplicity, the Authority is using the term LAC. However, due to these difficulties (most notably the lack of reliable cost information), the Authority highlights the fact that the word “accounting” in LAC is not an accurate description of this methodology in the Referred Work. The more accurate description is Local Hybrid Costs, as the methodology being employed is a hybrid approach that, given the information constraints, attempts to identify local costs wherever possible; it also draws on the results of the AAC-plus methodology because limited local accounting costs are available.

6.37 Albion stated in a letter of 19 April 2007, that *“[I]t suggests that [the Authority] has not taken any steps to understand the actual level of local costs but are relying on a “hybrid” approach, which is dependent on the outcome of other methodologies. This appears to run counter to the guidance offered by the Tribunal.*” Dŵr Cymru has stated before the Tribunal that it does not have LAC information relating to most of the services underlying the FAP. As a result, to meet the Tribunal’s concerns about using local costs as a cross-check, the Authority has used its best endeavours to produce a local estimate of the cost of the services attributable to the FAP.

6.38 Albion has criticised what it considers to be the lack of information provided on the LAC model (for example, its letter of 4 May 2007). The Authority considers that it has provided all the information Albion needs in order to comment sensibly on the LAC methodology as set out in Section 9.

6.39 There has been some misunderstanding of how LAC works. Based on certain text in the Draft Assessment, Albion apparently understood that LAC was based on the LRIC model at a 100% increment and that the LAC results were highly sensitive to demand change assumption. The Authority explained at the tri-partite meeting held on 18 May 2007 that the LAC model is based on the Modern Equivalent Asset Values ("MEAVs") of the Ashgrove system. The MEAV estimate is multiplied by the ratio between MEAV and Regulatory Capital Value ("RCV") at company level for Dŵr Cymru (12%) to allow for the capital value discount at privatisation. The Authority has called the resulting capital base

the Modified Acquisition Cost ("MAC"). Therefore, the LAC model does not rely on the LRIC model and is not sensitive to demand change assumptions (transcript page 4, line 25 to page 5, line 9).

6.40 Dŵr Cymru argued that the LAC casts light on the extent to which a customer or customer class is a beneficiary or otherwise from regional averaging and whether differences observed are very significant (11 May 2007).

6.41 Dŵr Cymru raised other doubts over the use of the LAC model which are addressed in Section 9 below.

B. The Authority's approach to three issues common to the methodologies

(1) The cost of capital used in the methodologies

The regulatory cost of capital

6.42 The starting point for the choice of the cost of capital is the Authority's publication *"Final Determinations: Future water and sewerage charges 2000-05"* dated 25 November 1999 (the "Final Determinations 1999").

6.43 On page 129 of that document, the Authority stated that: "*[T]he Director considers that the post-tax cost of capital for an efficiently financed water company is in the range 4.25%–5.25% in real terms. This range excludes any small company or embedded debt premia*" (page 129). The Authority went on to say in this document that "*[I]n the determinations, a cost of capital on new investment of 4.75% has been assumed for all water and sewerage companies*" (page 130). Those figures are all in real-post-tax terms. The justification for the 4.75% real, post-tax cost of capital is given in detail in Section 10.3 of the Final Determinations 1999 and Appendix C to that document entitled *"[T]he cost of capital".*

6.44 The 4.75% real, post-tax cost of capital is equivalent to 6.8% on a real, pre-tax basis. A cost of capital of around 6.8% on the RCV of Dŵr Cymru is equivalent to a cost of capital of around 1% on the MEAV of Dŵr Cymru. The Tribunal used a rate of return of 1% for "illustrative purposes" in the Main Judgment as explained in paragraph 58 of the Refusal Judgment.

6.45 6.8% is the cost of capital the Authority allowed for Dŵr Cymru as a whole (and the other appointed water and sewerage companies) in the Final Determinations 1999. The Authority used this cost of capital in the AAC-plus, LRIC and LAC methodologies in the Draft Assessment. However, as the Authority explained at paragraph 6.36 of the Draft Assessment sent to the parties on 3 May 2007, "*[A] theoretical argument could be made that if the Tribunal wants a local, Ashgrove-specific set of costs then the cost of capital also*

needs to be disaggregated". The Authority explained at the second tri-partite meeting held on 18 May 2007 that it had been looking at what Dŵr Cymru's disaggregated cost of capital might have been in 2000-01 for the Ashgrove system and stated that "*[W]e are currently leaning towards using this local cost of capital in the final assessment as at least a sensitivity check. You might want to comment on that*" (transcript, page 3, lines 21 to 24).

Dŵr Cymru's comments on the cost of capital

6.46 The parties have expressed views on the cost of capital following the Draft Assessment. Dŵr Cymru's view in its letter of 11 May 2007 was that Dŵr Cymru's regulated cost of capital of 6.8% and the related comments made in the Draft Assessment "*may well be valid as regards general tariff-setting, but they are not relevant to an excessive pricing test […] If, as it appears, [the Authority] believes that the correct assumption is that required rates of return differ, then it would be wrong not to apply that view to the assessment of costs for the purposes of the excessive pricing test*" (pages 7-8). Dŵr Cymru added that "*it is by no means a straightforward exercise to arrive at a view of the underlying required rate of return for the non-potable water supply (or common carriage) service. However, in the light of any uncertainty, it would be entirely appropriate, in the context of an excessive pricing test, for [the Authority] to consider a range of values. For the purposes of the standalone calculation [the Authority] chose a figure of 15%: Jones 2 adopted 17.5%. For the reasons set out in that witness statement, 12.5% might reasonably be regarded as a lower estimate, with 25%, say, representing an "upper estimate"*" (page 8).

6.47 The Authority believes that the appropriate cost of capital used in an excessive pricing test can be different to the cost of capital used in a regulatory context. The Authority does not look at the disaggregated cost of capital for serving industrial, non-potable customers in a regulatory context. However, in this particular case and following the indications given by the Tribunal in its judgments, in the Referred Work the Authority is not examining the standalone costs of the Ashgrove system, but instead is looking at three methodologies (AAC-plus, LAC and LRIC); these are based on Dŵr Cymru's costs, not a standalone company's costs, and are more locally-cost based than the AAC methodology used by Dŵr Cymru to calculate the FAP. For that reason the Authority is not looking at the cost of capital of a standalone company serving Shotton Paper but Dŵr Cymru's disaggregated cost of capital for serving industrial, non-potable customers. Therefore the Authority does not consider it is bound by the standalone cost of capital of 15% it used in its assessment of Dŵr Cymru's standalone cost calculation for the 2006 hearing.

Albion's comments on the cost of capital

6.48 In its third letter of 21 May 2007, Albion stated in relation to the cost of capital that "*Albion has already drawn [the Authority's] attention to the expressed views of the Tribunal in this regard. At this late stage of the investigation it appears odd if [the Authority] is now to undertake new work on disaggregating costs for the purposes of analysing the sensitivity to differing costs of capital. If it is to do so, for regulatory balance, a similar sensitivity analysis should be undertaken on the MEAVs used and any weightings thereto, against which the costs of capital are applied. Can [the Authority] point us to any contemporaneous evidence to suggest that the FAP methodology used a different cost of capital?*" (page 2).

6.49 The Tribunal gave no specific guidance to the Authority on what cost of capital should be used in the Referred Work rather, it emphasised the illustrative nature of the cost of capital it employed stating "*the Tribunal used, for illustrative purposes, the rate of return on MEA values of one per cent (rather than [17.5%]) that Dŵr Cymru had itself used when calculating its Large Industrial Tariff in 1999 which, in turn, formed the underlying basis for the reasoning on distribution costs in the Decision*" (paragraph 58 of the Refusal Judgment). Furthermore, the Authority recognises that the Tribunal's comments on the rate of return are the subject of ongoing legal proceedings by Dŵr Cymru before the Court of Appeal.

6.50 The Authority's view is that it is internally consistent with the methodologies to use local costs, including local MEAVs for the Ashgrove system, and a local cost of capital. The Authority has undertaken considerable work to make its MEAV estimates as robust as possible and, in particular in view of the need to prioritise within the six-month period set by the Tribunal for the Authority to carry out the Referred Work, has not undertaken sensitivity analyses of those MEAV estimates.

6.51 In answer to Albion's final question, no contemporaneous evidence has been presented to the Authority to suggest that the AAC methodology Dŵr Cymru used to calculate the FAP used a different cost of capital because that methodology used Dŵr Cymru's actual return on its business. However, in the Referred Work, the Authority is looking at three methodologies which are more locally-cost based than the AAC methodology Dŵr Cymru used to calculate the FAP. As noted above, taking account of the indications of the Tribunal in this particular case, for those methodologies the Authority considers it can be more appropriate to look at an estimate of Dŵr Cymru's disaggregated cost of capital for serving industrial, non-potable water customers.

The Europe Economics' report

6.52 On 5 June 2007, the Authority wrote to the parties attaching a Europe Economics' report entitled *"Shotton Case - Appropriate Rate of Return for Industrial Non-potable Water Supplies"*. The report presents an estimate for this case of what a water company's disaggregated cost of capital might be for serving industrial, non-potable customers.

6.53 As explained in the Authority's letter of 5 June 2007, Dŵr Cymru does not disaggregate its cost of capital and as a result it is difficult to give a precise number for Dŵr Cymru's cost of capital for serving its industrial, non-potable customers. The Authority explained that it was minded to use Europe Economics' report in the following way. Europe Economics looks first at the cost of capital for industrial water supplies using two methods. Europe Economics considers the method based on the relative volatility of non-potable water to potable water supplies to be as good a proxy as is easily available for estimating the cost of capital for industrial water supplies. That method produces a result that the cost of capital for water supply to industrial, non-potable customers would be 3.0 percentage points higher than for water supply as a whole (paragraph 1.23). Europe Economics uses another method based on a comparison to energy utilities, but considers the result of that method to "*underestimate the systematic risk*" (paragraph 1.25) and to be "*downward biased*" (paragraph 1.27). On that basis, the Authority currently plans to use 3.0 percentage points, post-tax as the estimate of the increase in the cost of capital resulting from the increased risk of serving industrial, non-potable customers.

6.54 Europe Economics then looks at the specific risk of asset stranding Dŵr Cymru incurs in serving Shotton Paper by using historic default rates of bonds of the relevant credit rating. Europe Economics acknowledges some of the qualifications on its main method and notes in particular that the probability of default might be "*an overestimate of the risk of the asset actually becoming stranded*" (paragraph 2.4). Europe Economics also recognises that the cross-check it uses based on bond yields "*could be biased upwards*" (paragraph 2.14). The Authority considers that there might be an element of double-counting between the risk of asset stranding and the increased risk of serving industrial, non-potable customers. This is because some of the volatility in non-potable supplies arises from non-potable water users going out of business. Furthermore, including an uplift for the risk of asset stranding might lead to double counting with the inclusion of a charge for doubtful debts in the AAC-plus and LAC methodologies. For this reason the Authority is not minded to include a separate uplift on the cost of capital to reflect compensation for the risk of asset stranding.

6.55 In summary, the Authority is using a disaggregated pre-tax cost of capital for serving industrial, non-potable customers of 11.1% in the Final Report (and not the 12.2% preferred by Europe Economics) for the LAC and LRIC models. This number is calculated as follows:

LAC and LRIC models	Percentage points
Dŵr Cymru regulated cost of capital set at PR99, real, **post-tax**.	4.75
Adjustment for increased risk of industrial non-potable supplies, real, **post-tax**.	3.00
Dŵr Cymru's disaggregated cost of capital for industrial non-potable supplies, real, **post-tax**.	7.75
Dŵr Cymru's disaggregated cost of capital for industrial non-potable supplies, real, **pre-tax**.	11.07

6.56 For the AAC-plus model the Authority is using a disaggregated pre-tax cost of capital for serving industrial, non-potable customers of 8.0% in the Final Report. This number is calculated as follows.

AAC-plus model	Percentage points
Dŵr Cymru's actual return on its water supply business in 2000/01, real, **pre-tax**.	3.7
Adjustment for increased risk of industrial non-potable supplies, real, **post-tax**.	3.0
Adjustment for increased risk of industrial non-potable supplies, real, **pre-tax**.	4.3
Dŵr Cymru's disaggregated cost of capital for industrial non-potable supplies, real, **pre-tax**.	8.0

Further comments from the parties

6.57 In Albion's third letter of 7 June 2007, Albion questioned why the Authority had used the 3.0 percentage point adjustment for the increased risk of industrial non-potable supplies, real, post-tax rather than the 0.85 percentage point adjustment based on a comparison with Energy Utilities that Europe Economics had also mentioned. Dŵr Cymru by contrast considered that the comparison to energy utilities "*cannot yield useful results, both for reasons to do with methodology and with the data*" (letter of 8 June 2007).

6.58 In a letter of 12 June 2007, the Authority explained to the parties that "*[A]lthough Europe Economics calls its estimates "high" and "low" it is clear from reading the report in full that Europe Economics considers the methodology based on the relative volatility of non-potable volumes to potable volumes to be its main estimate (which produces a 3.0 percentage point adjustment) and that Europe Economics considers the brief comparator analysis based on energy utilities (which produces a 0.85 percentage point adjustment) to "underestimate the systematic risk" (paragraph 1.25) and that it could be "downward biased" (paragraph 1.27)." Europe Economics makes this clear in paragraph 3.2 when it states:*

> *"The brief volatility analysis suggests that the cost of capital for industrial water supply should be about 3.0 percentage points higher than that for water supply as a whole. The brief comparator analysis [based on energy utilities] is of limited value, since there are no data relating to supplies to industrial customers alone. If that were disregarded, which would not be correct, the comparisons would point to an adjustment of only 0.85 per cent."*
>
> *The Authority therefore considers that it is not using Europe Economics' "high" adjustment but Europe Economics' main estimate of 3.0 percentage points."*

6.59 Also in its third letter dated 7 June 2006, Albion questioned why Europe Economics had not used the non-potable and potable volumes of water supplied to customers using in excess of 250Ml/year as a better measure of industrial use volatility stating that that calculation would lead to a decrease in measured volatility more commensurate with the very low volatility exhibited by Shotton Paper's own demand. As the Authority explained to the parties in its letter of 12 June 2007, Europe Economics considers the method based on the relative volatility of non-potable water to potable water supplies to be as good a proxy as is easily available for estimating the cost of capital for industrial, non-potable water supplies. Using non-potable and potable consumption of large

users (over 250 Ml/year) might well increase the measured volatility if the potable water consumption of large-users is more variable than the potable water consumption of small users (under 250 Ml/year). The Authority explained on 12 June 2007 that in the time remaining for the Referred Work it was not proposing to carry out this calculation.

6.60 Dŵr Cymru objected to Europe Economics using the relative volatility of non-potable water to potable water supplies in aggregate for Anglian Water ("Anglian"), Dŵr Cymru and United Utilities and said that the analysis should be carried out using data from Dŵr Cymru only (letter of 8 June 2007, page 2). Albion said that it *"[did] not see a problem in using industry data for cost of capital (rather than that specific to Dŵr Cymru)*" (letter of 12 June 2007, page 1). The Authority notes that Europe Economics specifically chose an aggregate data series so that "*company specific shocks would be somewhat smoothed out*" (paragraph 1.17).

6.61 Dŵr Cymru also pointed out that the data Europe Economics used for non-potable water delivered probably excluded the data for Shotton Paper which was classified as a "bulk export" from May 1999 onwards. There has not been time before the Tribunal's deadline to recalculate the data using Shotton Paper's volumes after May 1999. However, using an aggregate non-potable water delivered figure for Anglian, Dŵr Cymru and United Utilities will have reduced the effect of this exclusion on the results.

6.62 Albion also questioned why the Authority was using a disaggregated cost of capital in the context of an excessive pricing test but would not do so in a regulatory context. As explained in the letters to the parties of 5 and 12 June 2007 the Authority believes that the appropriate cost of capital used in an excessive pricing test can be different to the cost of capital used in a regulatory context. The Authority does not look at the disaggregated cost of capital for serving industrial, non-potable customers in a regulatory context. However, in this particular case and following the indications given by the Tribunal in its judgments, in the Referred Work the Authority is looking at three methodologies (AAC-plus, LAC and LRIC) that are more locally-cost based than the AAC methodology used by Dŵr Cymru to calculate the FAP. For that reason, the Authority is looking at Dŵr Cymru's disaggregated cost of capital for serving industrial, non-potable customers. The Authority's view is that it is internally consistent to use disaggregated cost estimates and a disaggregated cost of capital in the Referred Work methodologies.

6.63 Dŵr Cymru commented that the CAPM framework Europe Economics has used only allows for systematic risks. Dŵr Cymru argued that asset stranding is an asymmetrical non-systematic risk which needs to be included in addition to the adjustment for the

increased risk of industrial non-potable supplies. Dŵr Cymru added that Europe Economics' estimate of a 0.8 percentage point uplift on the cost of capital, required to compensate for the risk of asset stranding due to bankruptcy, was an under-estimate. This is because asset stranding can occur for reasons other than bankruptcy such as re-location or technological changes. Dŵr Cymru considered that the other risks of asset stranding were at least as great as the risk of asset stranding resulting from bankruptcy and therefore that the uplift of the cost of capital required to compensate for the risk of asset stranding was at least 2.4 percentage points (letter of 8 June 2007).

6.64 In response, Albion referred to the Authority's statement in MD163 that: "*[S]tranded assets have not proved to be a significant barrier to competition in other industries. [The Authority] expects that they should not be a barrier in the water industry either*." Albion argued that risk of stranding is "*part and parcel of business activity*" and that "*businesses should have an economic incentive to minimise the impact of stranding of assets*". Albion therefore said "*[I] agree with the [Authority] assessment that no separate allowance need be made in relation to stranded assets*" (letter of 12 June 2007, page 2). The Authority has not included an uplift to allow for the risk of asset stranding in the cost of capital used in the Final Report for the reasons given above.

6.65 Several issues in relation to the cost of capital arose which the Authority did not have time to investigate within the Tribunal's deadline. The issues were:

- Albion argued that the 4.75%, real, post-tax cost of capital used in PR99 was not a risk-free cost of capital but already included risk premia and that any disaggregation might only apply to the existing risk premia in the regulated cost of capital (letter of 12 June 2007, page 2).

- Dŵr Cymru argued that the 4.75% starting point was too low because it did not include the company-specific embedded debt premium (0.32% for Dŵr Cymru) and the company-specific financeability uplift (which is not public information but Dŵr Cymru estimates was 0.1 – 0.3%) allowed in PR99. Dŵr Cymru further argued that the cost of capital allowed in PR99 was an under-estimate as demonstrated by appointed water companies trading at a discount to their RCV. Dŵr Cymru estimates that this meant its cost of capital was around 0.4% too low. Overall, Dŵr Cymru considered that the base post-tax regulated cost of capital should have been 5.8 to 6.0% not 4.75% (letter of 8 June 2007, pages 3 to 4).

- Albion argued that it was inappropriate of Europe Economics to use a "tax wedge" of 30% in its calculation as account should be taken of any reduction of deferral of tax relevant to Dŵr

Cymru (letter of 12 June 2007, pages 1 to 2). Dŵr Cymru responded on 13 June 2007 that *"[the Authority] is entirely correct to use a pre-tax cost of capital for the purposes of the Referred Work."*

- The Authority would have considered investigating why Dŵr Cymru's actual return on its water supply business was so low in 2000/01 at 3.7%.

The Authority's conclusion on the cost of capital

6.66 On the basis of the considerations above, the Authority has used an estimate of the disaggregated cost of capital of 11.1% in the LAC and LRIC models and 8.0% in the AAC-plus model in the Final Report.

6.67 The Authority emphasises that the estimated disaggregated cost of capital for serving industrial, non-potable customers which it has used in the Final Report is strictly for the purposes of an excessive pricing test in this particular case and where the Tribunal has required the Authority to use more locally-cost based methodologies that those used in a regulatory context. The Authority does not use a disaggregated cost of capital in a regulatory context and has no plans to do so at present.

6.68 The Authority also notes that if it used a higher cost of capital on industrial customers in a regulatory context the Authority would need to reduce the allowed cost of capital on the rest of the appointed water company's business and adjust retail prices for industrial and domestic customers as a result. This did not occur in practice in 2000/01.

(2) Common carriage services

6.69 In its letter of 17 April 2007 about the methodologies, the Authority explained that supplementary and attributable common carriage services costs would be identified, costed and priced separately (page 8).

Costing the common carriage services

6.70 As explained in Section 5 above, entitled "Identifying the relevant services", common carriage services are services required by virtue of setting up a common carriage arrangement. On 12 February 2007, the Authority asked (in its draft information requests) the parties what services in addition to partial treatment and transportation were planned under the proposed common carriage agreement in 2000/01. Following clarification at the 20 February 2007 meeting, the Authority repeated this question in modified form in its information requests of 27 February 2007.

6.71 In its reply of 12 March 2007, Albion stated that there was an agreement on the services required at the relevant time. Albion stated that the requirement for customer services was minimal and that an annual figure of £1,000 should be sufficient to cover all common carriage customer services costs.

6.72 In Dŵr Cymru's letter of 26 March 2007, Dŵr Cymru stated that in March 2001 at the time of the FAP, Albion had not set out its common carriage requirements or how common carriage might have worked. Dŵr Cymru stated that negotiations had not actually commenced on how common carriage would actually work. However, at the Authority's request for further information, Dŵr Cymru provided a "thumbnail sketch" of a relatively simple set of potential common carriage arrangements with some rough estimates of the costs (see **Table 3** below). In a letter of 11 May 2007, Dŵr Cymru added the item of a system for dealing with unders and overs.

Table 3 – Dŵr Cymru's thumbnail sketch of common carriage services and rough estimates of the associated costs

Item	**Cost**
(1) Up-front capital costs for connection infrastructure	£75,000
(2) Ongoing connection costs	£2,000 / year
(3) Negotiation costs	£10,000
(4) Ongoing negotiation costs	£1,000 / year
(5) Management and operation of the system	£16,800 / year
(5a) A system for dealing with "unders and overs"	No figure provided (possibly a component of the £16,800 / year above)
(6) Billing	£2,400 / year
(7) Albion-specific costs	£100,000 / year

6.73 The Authority has given its view in Section 5 on "Identifying the relevant service" on whether these common carriage services should be included in the FAP and that view is summarised in **Table 2**. The Authority's view is that connection and negotiation costs would not have been included in the FAP. As a result the Authority has not needed to cost items (1), (2), (3) and (4).

6.74 On item (5), the Authority accepts Dŵr Cymru's submission that "*the control of the Ashgrove system by the network operator would*

become more complicated [under a common carriage arrangement]". The extent to which this would be the case would have been hard to predict in 2000/01. Dŵr Cymru's rough estimate for additional staff costs of £16,800 is based on the assumption that the amount of time each of five controllers spent on managing the system would increase from 5% to 10% under the common carriage arrangements.

6.75 There are no other instances of common carriage in the water industry which can be used to check this assumption. The Authority considered whether any evidence could be used from the gas or electricity industries. However, the Authority has not found a directly comparable case in those industries. The gas and electricity industries are vertically separated and Ofgem regulates the costs of the network operators.

6.76 In the Draft Assessment, the Authority used Dŵr Cymru's estimate of an additional cost of £16,800 per year of operating the new arrangements, noting however that it had excluded given the other items. In the Draft Assessment, the Authority considered the costs might be higher in the first few years, but lower in later years as the operational arrangements became established.

6.77 On reflection, the Authority considers that £16,800 per year for increased operational costs could be on the high side. It is likely that Dŵr Cymru would incur higher system operation costs in the first few years of the common carriage arrangements but over time as the arrangements bedded down the system controllers would become used to the arrangements and there might be very few, if any, additional operational costs arising from common carriage. However, the Authority has accepted in Section 5 that the initial set up costs of a system of "unders and overs" might well have been included in the FAP. This would represent an upfront cost to be included in the FAP.

6.78 On item (6), "billing" the parties' cost estimates are £1,000 for Albion and £2,400 for Dŵr Cymru. There are very small costs in the terms of the overall Shotton supply. The Authority also has information from Dŵr Cymru under the WSL regime (see however footnote 14) that the customer service costs for a retail licensee would be £1,500 per year. The Authority's view in the context of this case is that it sees no reason why the customer service costs for common carriage would be much higher than those for a retail licensee. Therefore the Authority considers that the amount for common carriage customer service costs allowable in the FAP is £1,500.

6.79 On item (7), the Authority's view in Section 5 is that on balance in 2000/01 Dŵr Cymru could have included an allowance for Albion-specific costs in the FAP, but any costs beyond a reasonable level could have been charged for separately. Dŵr Cymru suggests

such costs could be up to £100,000 per year based on the evidence presented in the second witness statement of Christopher Alun Jones. That would amount to a cost of about 1.6p/m^3. The Authority considers that it is unlikely that Albion would have accepted such a charge as part of the FAP and that a more likely outcome, following further negotiations, would have been that the common carriage arrangements would tightly prescribed common carriage customer services Albion was entitled to and that any service beyond that would have been charged for separately.

6.80 In the Draft Assessment, the Authority's preliminary view was that in total common carriage services allowable in the FAP amount to £18,300 or about 0.3p/m^3. That was based on £16,800 per year for additional operational costs of common carriage and £1,500 for common carriage service costs.

6.81 The Authority's final view is that common carriage service costs should still amount to 0.3p/m^3, but the composition is different. The Authority has assumed that Dŵr Cymru's upfront costs of setting up the common carriage arrangements are around £50,000 to cover setting up a system for "unders and overs", adjusting Dŵr Cymru's operational systems to manage common carriage and training the system controllers. The Authority has further assumed that ongoing common carriage operating and customer service costs fall from £20,000 in the first year of operation to reach a steady state of £5,000 per year by the fifth year of operation of the common carriage arrangements. The £5,000 per year consists of common carriage customer service costs, some allowance for the higher customer services Albion would probably have required and some costs arising from the ongoing operational complexity of managing common carriage compared to the previous arrangements under the SBSA. Using Dŵr Cymru's disaggregated cost of capital of 11.1% that translates into a cost of around 0.3p/m^3 per year over a 10-year contract to be included in the FAP.

6.82 The Authority would emphasise that in this Referred Work the Authority is assessing what costs could reasonably be included in the FAP, i.e. in this particular case, for the purposes of an excessive pricing test. The views above on upfront and ongoing costs arising from common carriage do not bind the Authority's regulatory approach to common carriage going forward.

(3) Costing the back-up supply

6.83 In Section 5, the Authority explained that it would be reasonable to assume that the costs of the back-up supply were implicitly included in the FAP in 2000/01. The back-up supply to Shotton Paper represents a significant cost. As the Tribunal has noted, Shotton Paper's water consumption is equivalent to the consumption of a "medium sized town" (paragraph 69 of the Main Judgment). A back-up supply for that amount represents a

significant available volume and 8Ml/day of potable water is in itself enough to supply a small town.

6.84 In the Draft Assessment of 3 May 2007, the Authority stated that it was not familiar enough with the details of the back-up supply arrangement to be definitive about the likely attributable costs. Since 3 May 2007 the parties have provided a considerable amount of further information about the details of the back-up supply arrangements.

The parties' comments

6.85 Prior to the Draft Assessment, in its letter of 12 March 2007, Albion stated "*[F]rom our records, the maximum use of potable water for non-domestic purposes in 2000/01 was 1.76Ml/d, with the average for that year of 8m^3/d. Footnote 5: Dŵr Cymru's records may record a slightly higher daily average as the valve was letting water pass throughout this period*" (page 3, response to question 3(d)). Albion also stated in its letter of 19 March 2007 that "*[T]he maximum delivery rate of potable water was 130 l/s (11.2Ml/d) in 2006. This was recorded during a complete shut of the Ashgrove WTW (sic). Indeed, it was only Shotton Paper's use of its own storage facilities that enabled Dŵr Cymru to carry out its clean. In this sense it was able to take an 'interruptible' service*" (pages 3-4).

6.86 In a letter dated 8 May 2007, Albion provided some details on Shotton Paper's use of the back-up supply and the costs of the back-up supply. The main points Albion made were:

- In 1999 when Albion's inset started, Shotton Paper was using a small volume of potable water as: (1) a top-up supply for which Shotton Paper paid potable water prices and; (2) a back-up supply in the event of a failure of the Ashgrove system for which Shotton Paper paid the prevailing non-potable price. Since then Albion has worked with Shotton Paper to reduce potable top-up use. Albion stated that Shotton Paper's use of potable water for top-up purposes had been reduced significantly from a small base.

- Albion considered that the Authority's suggested 4.4p/m^3 cost for back-up supply implied an annual cost for potable back-up of £300,000. Albion translated that into a unit cost for the potable water actually used of £14/m^3.

6.87 The Authority wrote to Dŵr Cymru on 14 May 2007 asking questions about the back-up supply.

6.88 Dŵr Cymru replied on 15 May 2007 making the following main points:

- The back-up supply is more than a storage facility because a storage facility has finite capacity and will run out within a certain

number of hours or days, "*[B]y contrast the potable back-up offers a continuous supply, which could provide very substantial volumes in the event of an extended partial or total outage in the Ashgrove system*."

- "*[W]e would observe that the extent to which a back-up has actually been used does not generally affect the cost of providing it*"

- "*[V]ery few [customers] have the benefit that Shotton Paper enjoys of a genuinely independent back-up supply to the site itself*."

- "*[T]he back-up service can be provided from either the Alwen system or the Bretton system*."

- "*The central theme of RD05/03, we note, is that there is no single "recipe" for the pricing of back-up supplies, and that the circumstances of each case have to be examined and some judgment exercised; in the light of those principles, we believe that [the Authority's] preliminary conclusions on costing the back-up supply are reasonable, albeit that we would question some of the figures*."

- Dŵr Cymru considered that the 15% of potable treatment capital costs and resource capital costs that the Authority attributed to the back-up supply in the Draft Assessment was "*very low*". Dŵr Cymru argued that "*[O]n the grounds that completely "dedicated" capacity would warrant a figure of 100%, this points to a figure substantially in excess of 50%, and possibly as high as 95%*." Dŵr Cymru added that the calculation should take into account all operating costs with the exception of variable costs such as power and chemicals. Dŵr Cymru considered the figure for resource availability should be in the region of 10-12p per m^3.

- For bulk transportation, Dŵr Cymru noted that "fixed" operating costs may not have been included. But Dŵr Cymru considered that other than that point "*the figure of 8p per m^3 does not appear unreasonable (subject to the general concern that it reflects a rate of return which we believe was less than 0.5%)*".

- Dŵr Cymru noted other companies' charges for back-up supplies which last year were £113.77 per m^3 per day or 31p per m^3 reserved for Anglian and £60.82 per m^3 per day or 17p per m^3 reserved for United Utilities. Dŵr Cymru added that those numbers would be about 20% lower in 2000/01 due to inflation, but that "*they still indicate that [the Authority's] calculation in the [Draft Assessment] are not unreasonable*".

- Dŵr Cymru provided the following table (**Table 4**) on the use of the potable supply for each of the last six years. In its 15 May

2007 letter, Dŵr Cymru was not able to provide details on the pattern of usage of the replacement volumes but considered that in general the volumes referred to just one or sometimes two events in a year. Dŵr Cymru gave the example of the 12.3Ml supplied in 2006/07 (first ten months) for replacement purposes which was needed on a single occasion because the Ashgrove WTW was closed for planned maintenance.

Table 4

All figures in Ml (not Ml/day)	**Supplementary supply (charged at potable price)**	**Replacement supply (at non-potable price)**	**Total**
2006/07 (first ten months)	15.8	12.3	28.1
2005/06	2.5	-	2.5
2004/05	5.6	-	5.6
2003/04	18.8	7.9	26.7
2002/03	27.9	10.7	38.6
2001/02	23.4	2.7	26.1

- Importantly Dŵr Cymru noted that "[*P]otable supplies for "domestic" use are made by means of a separate connection and are not shown*."

6.89 At the tri-partite meeting on 18 May 2007, Albion made several comments on Shotton Paper's use of the back-up supply and the costs of the back-up supply. The main points Albion made were:

- Shotton Paper uses its back-up supply very infrequently (transcript page 23, lines 11 to 19).

- "*To describe the back-up system as an 8 Ml a day, always on, always available supply would be to significantly misrepresent the facts*" (transcript page 39, lines 23 to 15).

- Dŵr Cymru claims that there are two sources of supply for the potable water: the Bretton and the Alwen system. "[*T]he Alwen system […] theoretically can supply Shotton. Practically, it cannot"* (transcript page 39, lines 23 to 25). If the Alwen system is used it gives rise to *"very significant quality problems"* (transcript page 40, line 3).

- For the Bretton back-up "*the supply has to be requested from Bretton and only if operational circumstances allow its use will Bretton open the Rotork valve that enables that supply to be used. Occasionally, that Rotork valve jams and has to be locally operated. So there is a very distinct time lag between request and delivery of that service*" (transcript page 40, line 23 to page 41, line 5).

- *"the Bretton system is from the same river [as the non-potable supply to Shotton], upstream of Ashgrove, and is equally if not more vulnerable to […] pollution incidents"* (transcript page 41, lines 17 to 20).

- "*I think then we need to ask ourselves what is the evidence of the supply being available when it is needed. The evidence is that usually it is, but occasionally it isn't. The most recent incident, which happened only the other day, when the high-pressure main from the Sealand reservoir to the Shotton site burst, and when [Dŵr Cymru], to give them credit, stepped in and provided us with non-potable back-up supply, in that case, true sense of the word (sic). In that situation [Dŵr Cymru] advised us that they could only let us have three days' supply. At that point, the supply would have to cease*" (transcript page 42, lines 6 to 16)

- In response to the question whether Albion had ever been refused the back-up supply, Albion stated "[*T]here is evidence in the log from Bretton, I think*" (transcript page 43, lines 10 to 11).

6.90 In Albion's first letter dated 21 May 2007, Albion stated "[*T]here are, of course, significant uncertainties in the calculation of the cost of any back-up potable supply because, as we have demonstrated, that supply is only available when it is surplus to Dŵr Cymru's prevailing operational demand. There is no sense in which it has ever been treated as a dedicated 8 Ml/d, 24/7 resource and a short run marginal cost approach might therefore be more appropriate if [the Authority] is to attempt a valuation*" (page 2).

6.91 In a letter dated 22 May 2007, Albion stated that "[*R]eturns to all regulators confirm the fact that there is considerable headroom on both the Alwen and Bretton systems. This then begs two questions: (1) What is the appropriate way of valuing water that is surplus to current and anticipated ordinary potable water demand requirements and well within the normal delivery capacity of the systems?"* (page 2, the second question relates to the separate issue of the Heronbridge Water).

6.92 Dŵr Cymru responded to Albion's comments on the back-up supply from the tri-partite meeting in a letter dated 23 May 2007. The main points were:

- The terms of the SBSA that was in effect at the time the FAP was offered required Dŵr Cymru to ensure the back-up supply had a *"very high delivery probability".*

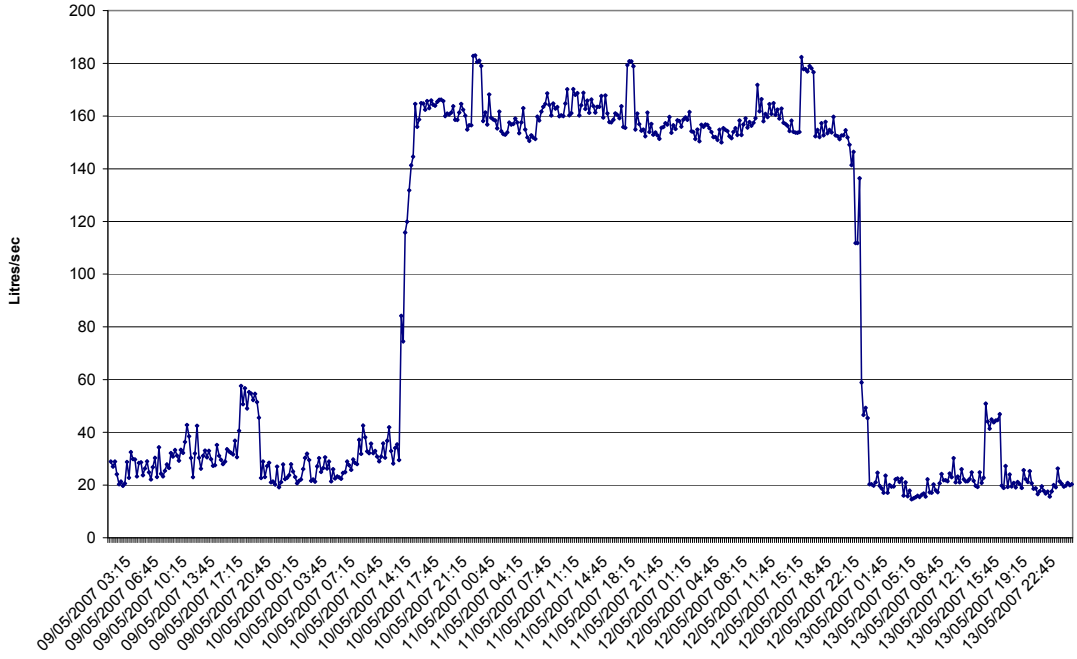
- Either the Bretton or the Alwen system can provide the back-up supply but at present Dŵr Cymru has chosen to set up the Bretton system to provide the back-up supply and it is not necessary for both systems to be set up to provide the back-up supply at the same time. Dŵr Cymru added that the Alwen system regularly supplies potable water to a service reservoir very close to the Shotton site. Dŵr Cymru considered that Albion might be referring to a different problem that used to arise in the Alwen system regarding stagnant water due to low flows.

- It rarely takes more than 15-30 minutes to respond to Shotton Paper's requests for potable water for process use.

- Dŵr Cymru is obliged to provide 8Ml/day of back-up potable supply but Dŵr Cymru often provides additional flows up to 127 litres per second or around 11 Ml/day.

- Dŵr Cymru provided the graph below (**Figure 1**) of the flow patterns for the relevant potable supply zone during Shotton Paper's recent non-potable supply pipe outage on 10 to 13 May 2007. **Figure 1** shows that the demands of the other customers in the area generally run at around 20-30 litres per second. When Shotton Paper requires the back-up supply the flow increase by five or six-fold and falls back when the back-up is no longer required. Dŵr Cymru explained that the five smaller spikes on the graph are the consequence of another significant customer's use of the potable supply as a no-notice back-up.

Figure 1



- Dŵr Cymru considers that the back-up supply is "*extremely reliable*". According to the logs attached to Lynnette Cross' witness statement there were 60 requests by Shotton Paper for potable water during the period May 1999 – August 2004. Dŵr Cymru provided the information in the table below on those requests and concluded that it was able to meet more than 98% of Shotton Paper's requests for back-up supply.

Table 5

Request	Issue
60 requests May 1999 to August 2004, of which:	-
Unable to meet one request	A time of heavy widespread electrical storms that affected the power supply to many of Dŵr Cymru's water supply assets in the region.
Two requests were met with a slight delay.	The delay was less than two hours.
One request refused but met later that same day.	On the morning of 23 February 2004, Dŵr Cymru initially said it could not meet the request for potable water because of planned maintenance, but Dŵr Cymru later cancelled the maintenance and advised Shotton paper the potable water would be available later that day.
Back-up not available for 4 days, later available but at more notice.	Dŵr Cymru advised Shotton paper on 15 March 2004 that it could not provide back-up supply for four days due to planned maintenance. Shotton Paper did not request any back-up potable water. Later that day Dŵr Cymru advised Shotton Paper that it could provide the back-up supply (from the Alwen system) but more notice would be required.

- Dŵr Cymru rejected Albion's argument that the Bretton system is even more vulnerable to pollution incidents on the River Dee than the Ashgrove system and is therefore not a true back-up supply.

6.93 In a second letter of 23 May 2007, Dŵr Cymru responded to Albion's point in its first letter of 21 May 2007 that the back-up supply was "*only available when it is surplus to Dŵr Cymru's prevailing operational demand*" saying that it had already addressed Albion's point in Albion's 21 May 2007 letter in Dŵr Cymru's first letter of 23 May 2007 (page 5).

6.94 In Albion's first letter of 30 May 2007, Albion considered that Dŵr Cymru's claim that "*the Alwen system could provide potable back-up supplies to Shotton Paper and that previous problems […] would be readily overcome […] appears to be a deliberate misrepresentation of the facts.*" (page 6). Albion argued on the basis of a Dŵr Cymru report from 2004 that the Alwen system could not easily provide a back-up supply to Shotton Paper

because extensive engineering works would be required to remove sediment from the network.

The Authority's view

6.95 The cost of the back-up supply is significant which is why the Authority has considered the detail of the parties' comments above. Following the extensive correspondence on the details of the back-up supply the Authority is able to draw firmer conclusions than in the Draft Assessment. The Authority gives its views on the main issues below.

6.96 Albion and Dŵr Cymru dispute whether the back-up supply is used often. Dŵr Cymru has presented evidence that 60 requests for the back-up supply were made between May 1999 and August 2004 and that Dŵr Cymru met those requests on all but one occasion. Dŵr Cymru also provided data showing that the use of the back-up supply for supplementary and replacement purposes had varied from 2.5 Ml to 38.6 Ml in a year in recent years. On the evidence, the Authority accepts that the back-up supply is used relatively frequently. The Authority also accepts Dŵr Cymru's submission that whether a back-up supply is used frequently does not affect the fixed costs of providing the back-up supply.

6.97 Albion makes the point that the unit cost per unit of potable water actually used is £14/m^3. The Authority is not able to replicate Albion's number exactly, but the high unit cost reflects the fact that the back-up supply is a form of insurance which is there when it is needed most. Most of the costs attributable to the back-up supply are fixed costs which still have to be paid for regardless of how much water is used.

6.98 Albion has also argued that the back-up supply is not always available when Albion wants it and that it is only available when it is surplus to Dŵr Cymru's operational demand. However at the tri-partite meeting held on 18 May 2007, Dr Bryan (Albion) stated: "*[I] think then we need to ask ourselves what is the evidence of the supply being available when it is needed. The evidence is that usually it is, but occasionally it isn't" (transcript page 42, lines 6 to 9)*. Dŵr Cymru has also provided evidence that there were 60 requests for the back-up supply between May 1999 and August 2004 and that Dŵr Cymru met those requests on all but one occasion. On that basis the Authority concludes that the back-up supply is almost always available when requested.

6.99 Albion has also raised the time-lag in the availability of the back-up supply. Dŵr Cymru responded that it rarely takes more than 15-30 minutes to respond to Shotton Paper's request. However, the Authority does not consider this is a major issue for the costing of the back-up supply.

6.100 The discussion about whether the Alwen system can also provide the back-up supply as well as the Bretton system is not, in the Authority's view, a significant issue relevant to the cost of providing the back-up supply. Both parties agree that the Bretton system currently provides the back-up supply and the Authority considers that the back-up is almost always available when requested. Albion's point that the Bretton supply is drawn from the same source as the Ashgrove system and therefore does not constitute a true back-up, does not appear to have been an issue for the 60 occasions concerning which Dŵr Cymru provided information.

6.101 Turning to the issue of costing the back-up supply, the Authority understands that the maximum reserved (i.e. back-up) volume which Dŵr Cymru is obliged to provide under the SBSA is 8 Ml/d, but the Authority understands that it can be greater (and up to 127 litres per second or around 11 Ml/day). The Authority has outlined its position on stand-by charges in RD05/03 and RD31/03. The Authority did not prescribe a particular approach to setting stand-by charges. For the purpose of the Referred Work, the Authority has adopted a modified volume-capacity approach based on a network connection cost and a resource availability cost.

6.102 Dŵr Cymru has explained that the back-up supply is made by means of a separate connection to the connection for potable supplies for domestic use. Following the parties' comments on the Draft Assessment, the Authority is still of the view that in this particular case the network connection cost could be based on the capital costs (attributable profit and capital maintenance) of the trunk potable distribution system (the Authority understands that the back-up supply is provided through a 300mm main). Including trunk potable mains, potable water storage and potable distribution pumping the associated capital cost is around 8p/m^3.

6.103 In RD 05/03, the Authority stated *"we would not approve standby charges that are based on the costs of having dedicated back-up capacity for resources and treatment".* The Authority noted that *"exceptions can apply"*, notably where *"companies might have to keep dedicated capacity available on a dedicated basis where customers – such as ports and power stations – are large and remote"*.

6.104 On the likely attributable capital cost for resources and potable water treatment, the Authority considered in the Draft Assessment that for this back-up supply (to a discrete non-potable supply) the system diversity benefits appear to be negligible. The Authority assumed, for illustrative purposes, that 15% of potable treatment capital costs and 15% of resource capital costs were attributable to the back-up supply. On these assumptions the resource availability cost would be around 2p/m^3. Dŵr Cymru challenged this 15% figure as being "*very low*" and suggested the figure should be "*substantially in excess of 50%, and possibly as high as 95%*" and

that the figure for resource availability should be in the region of 10-12p/m^3. On the other hand, Albion has argued that there is considerable headroom on the Bretton system which should be taken in account when valuing water that is surplus to current and anticipated ordinary potable water demand requirements. Following the parties' comments, the Authority is not minded to change its assumption of 15%.

6.105 Using the figures above would mean that that the 24 hour, 8 Ml/d potable back-up supply service could have cost Dŵr Cymru around 10p/m^3 to provide (in 2000-01). This would have equated to around 25% of the appropriate standard large user potable tariff in 2000-01. This cost estimate excludes the need to provide operational control to actually manage this 24-hour potable back-up service. This simple provisional cost calculation illustrates how expensive such large-scale potable back-up supply services are. This is not surprising as Dŵr Cymru effectively has to keep 8 Ml/d of potable capacity on permanent “stand-by” – this is enough water to supply a small town of around 60,000 people. This cost of 10 p/m^3 equates to an equivalent cost of around 4.4p/m^3 (if re-based on the average volume of water, 18 Ml/d, supplied to Shotton in 2000-01), increasing to around 6.5p/m^3 (if based on a 12 Ml/d reservation volume).

7. DETAILED DESCRIPTION AND APPLICATION OF THE AAC-PLUS METHODOLOGY

7.1 Before explaining the four stages of the AAC-plus methodology, the Authority addresses a preliminary point on the functions received by non-potable customers. Dŵr Cymru has previously stated in regulatory correspondence that *"[I]f a customer class tends not to be provided with a particular function then no contribution to that function should be made*". Dŵr Cymru has further stated in regulatory correspondence that there is an important distinction between "*cost drivers that could be said to be "intrinsic" to different water supply services, as distinct from those that are "accidents" of history, topography, geography and so forth*". The Authority agrees with this general approach to tariff setting. However, the Authority notes that in this particular case the Referred Work requires a greater level of functional granularity than is normal for general tariff setting.

7.2 As noted above, the supply arrangements for the non-potable customer class in Wales are unique. No other customer class in England or Wales is supplied via a series of discrete water supply systems. This may reflect the geography and industrial/water industry history of Wales. Dŵr Cymru has provided a listing of its non-potable assets. A summary of these functional assets is provided in **Table 6** below. Albion is seeking access to a non-potable distribution main, a raw water aqueduct, a partial water treatment works and, by proxy, a water storage vessel (or in this particular case a flow management facility that is owned by another party).

Table 6 - Functional Nature of Dŵr Cymru's Ten Non Potable Systems

Non Potable System	Raw Water Reservoir	Source / Intake Pumps	Dual Purpose Pumps	Distribution Pumps	Raw Water Aqueduct	Partial Water Treatment	Storage "Service Reservoir"
S1	1						Unused
S2			>1				Yes
S3			7				
S4			2	3***			
S5		1		4***			Yes
S6	2	26		6	Yes	Yes	Open Tank
S7	1	9					Yes
S8		3			[Yes]		Yes
S9	2						Yes
S10		3**			Yes	Yes	Lagoons *

Notes:
* Under the control of Corus Shotton and used for flow management (and not in-line storage). Shotton Paper (on S10) also receives a substantial back-up supply.

** Pumping function "purchased" by Dŵr Cymru from United Utilities.

*** Could potentially be described as booster pumps as located "within the distribution" and not at the water treatment works (as per S6). Albion has disputed the fact that the non-potable main on S6 is pumped. All ten non-potable systems include a dedicated non-potable distribution main.

7.3 It is evident that the supply arrangement of each non-potable system is slightly different. However a number of broad generalisations can be drawn:

- Only the two largest supply systems (S6 and S10) provide (partial) water treatment.
- All, except two[16] (S1 and S9) systems, provide source/intake pumping. The extent of this pumping (in terms of the size of the pumps) is particularly extensive on the larger non-potable systems: S6, S7, S8 and S10.
- All, except three (S1, S3, and S4) systems, require a water storage (or on S10 a flow management) function. Five are served by "service reservoirs" (see below for a more detailed discussion of this point), whilst two (S6 and S10) are served by open storage vessels.

[16] Supplied under gravity from reservoirs.

- All ten systems provide for non-potable water distribution to the customer's site.

- Only three systems (S4, S5 and S6), including the largest system, apparently also provide "distribution" pumping, although only two (S4 and S5) might be possibly described as booster pumping.

- Only three systems (S6, S8, S10) include raw water aqueducts, although on these three systems the function is very extensive[17]. These raw water aqueducts are typically shared with other potable customers (S10 is an exception).

7.4 From **Table 6** above, the non-potable customer class is, functionally, quite heterogeneous. In relation to any regional average cost there will be customers on particular systems who can argue that they do not receive a specific functional element and that special provisions should be made. However, it appears that the asset intensity of each non-potable system is relatively similar, ranging from £0.5m to £1.5m per Ml/d[18] in 2000-01.

7.5 The AAC-plus model has been developed from Dŵr Cymru's new draft tariff model (the first draft of which was submitted to the Authority in late 2006 in relation to separate regulatory work). As part of the Referred Work, this draft tariff model has been populated with regulatory costs from 2000-01 by Dŵr Cymru. The draft tariff model was then adapted by the Authority to produce the AAC-plus model. The main adaptation has been the introduction of a greater level of functional granularity. For example, bulk water distribution is now split into a number of different sub-functions: pumping, storage, mains, and customer interface. The back-up supply is now costed separately.

7.6 The AAC-plus methodology is split into four main steps. These four steps are now discussed in turn. Except where stated, the references from Dŵr Cymru are taken from the company response (letter dated 26 March 2007) to the Authority's AAC information request. All of the AAC-plus model inputs and assumptions are provided in **Tables 7 to 13.**

Step 1 - Allocation of Company Regulatory Accounting Costs into Functional Activities

Operating Costs

7.7 Direct operating costs are taken from the penultimate stage in the preparation of the regulatory accounts i.e. before third party

[17] Non-potable systems make use of some 80km of raw water mains, approximately 15% of Dŵr Cymru's total stock of raw water mains. It is also the case that those 80 km are all in the largest size bands.
[18] Based on results of LRIC model and system specific MEAV estimates prepared by the Authority. Note this range excludes water resource development costs which may more than double this estimate.

services are separated out. Direct operating costs are then allocated into more specific functional activities by the company according to its subjective judgement (see **Tables 7 and 8**). Direct operating costs include both supervision and pay-roll costs. The Authority has assumed that "other direct" operating costs, including insurance premiums, have been included in general & support expenditure.

7.8 General & support expenditure (£28.8m) and rates (£13.2m) are allocated by direct functional operating costs (see paragraphs 7.10 and 7.11) and functional capital costs (see paragraph 7.13) respectively.

7.9 Other operating costs - including doubtful debts (£7.1m), scientific services (£3.6m) and regulatory services (£0.7m) – are not initially allocated to functional activities. They are allocated directly to customer classes according to the headline cost drivers (discussed under Step 2).

Table 7 - Operating Costs for Resources and Treatment

Nature of Expenditure	**Resources**	**Treatment**	**Total (£m)**
Employment costs	7%	93%	7.3
Power	80%	20%	4.4
Hired & Contracted	10%	90%	8.9
Materials & Consumables	1%	99%	4.4
Services Charges	100%	0%	6.2
G&S Expenditure	7%	93%	10.4
Total Expenditure (£m)	11.9	29.7	41.6

7.10 In the AAC-plus model, the general & support expenditures associated with resources and treatment are allocated pro rata to other costs, excluding power and services charges.

Table 8 - Operating Costs for Distribution

Nature of Expenditure	***Network***	***Pumping***	***Customer Interface***	***Total (£m)***
Employment Costs	63%	13%	25%	9.3
Power	20%	80%	0%	3.9
Hired & Contracted	64%	6%	30%	9.9
Materials & Consumables	68%	10%	22%	3.7
G&S Expenditure	64%	9%	27%	18.3
Total Expenditure (£m)	27.2	6.8	11.0	45.0

7.11 In the AAC-plus model, the general & support expenditures associated with distribution are also allocated pro rata to the other costs (excluding power).

Capital Maintenance

7.12 The Current Cost Depreciation is initially allocated by the company according to gross MEAV and associated asset lives (**Table 9** below). Infrastructure Renewals Expenditure is allocated by MEAV, with a specific adjustment for water resource infrastructure (**Table 10** below).

Table 9 - Current Cost Depreciation Costs

Asset Group	**Calculated CCD (£m)**
Source/intake pumps	5.7
Treatment works	19.1
Distribution pumps	2.4
Service reservoirs	9.3
Meters	1.4
Water Management & General	5.4
Total	43.3

Table 10 - Infrastructure Renewals Costs

Asset Group	**Calculated IRC (£m)**
Dams & reservoirs	0.5
Raw water mains	1.4
Distribution mains:	
>600mm	3.0
301 – 600mm	3.4
151 – 300mm	2.8
<150mm	9.5
Customer ancillaries	2.0
Total	22.6

Operating Profit

7.13 Operating profit (£26.7m) is allocated by gross MEAV (**Table 11**) weighted by the income risk factor (discussed under Step 4 above). Local authority rates are allocated by the income risk weighted MEAV. Like general and support (operating) expenditure, in the AAC-plus model, local authority rates are allocated directly to the individual functional activities and are not therefore included under the common cost headings. However, in reporting the results, these costs have been removed from the individual functional headings and reported separately.

Table 11 - Gross MEAV

Gross MEAV	£ m
Water Resources – Harvesting	908
Water Resources – Raw Water Mains	246
Water Resources – Pumps	132
Water Treatment	458
Water Distribution – Customer Interface	380
Water Storage	460
Water Distribution – Pumps	56
Water Mains to 150mm Diameter	1730
Water Mains 151mm to 300mm Diameter	513
Water Mains 301mm to 600mm Diameter	613
Water Mains over 600mm Diameter	537
Water Management/General	57
	6,090

7.14 It is difficult to directly compare the results to previous cost allocations provided by Dŵr Cymru as these were provided at a lower level of granularity. However, these initial cost allocations are broadly in line with the Authority's expectations. The Authority is satisfied that the above functional allocations are sufficiently robust for the purpose of this Final Report.

Step 2 - Allocation of functional costs across customer classes by headline cost drivers

7.15 The allocation of functional costs across customer classes is based on four broad customer class allocation factors: 1) volume delivered, 2) number of items (customers, bills, connections), 3) peaking factor (PF-hourly, daily, weekly, seasonal), or 4) other (e.g. turnover, attributable costs). The relative non-potable customer class position (compared to all customers) for each of these drivers is provided in **Table 12a**. Dŵr Cymru's position on applying the headline cost drivers (as used in its draft tariff model) is summarised in **Table 12b**. These are based on the subjective judgment of the company. The Authority has used the majority of these headline cost drivers in the AAC-plus model.

Table 12a – Summary of Headline Cost Drivers for Non-Potable Customer Class

Title				
	Driver	**Unit**	**Non Potable Customers**	**All Customers**
Driver 1	Volume Delivered	Mla	51,299	290,400
Driver 2	Connections	Nr	16	1,305,234
Driver 3	Seasonal Peak	Ratio	1.0	1.0
Driver 4	Average Day Peak Week	Ratio	1.1	1.2
Driver 5	Peak Day	Ratio	1.2	1.3
Driver 6	Peak Hour	Ratio	1.3	2.1
Driver 7	Number of Customers		14	1,242,225
Driver 8	Number of Bills		168	1,739,235
Driver 9	Turnover	£,000's	10,148	212,824

Table 12b – Application of Provisional Headline Cost Drivers

	1.Volume Delivered	2. Items - Connections	3.PF-Seasonal Peak	4.PF-Average Day Peak Week	5.PF-Peak Day	6.PF-Peak Hour	7. Items - Number of Customer	9.Turnover
Operating Costs								
Raw Water Aqueducts			85%	10%	5%			
Water Treatment – Materials	100%							
Water Treatment – Employ.				80%	20%			
Water Treatment – H&C Ser	50%			40%	10%			
Network – Interface		50%					50%	
Network – Mains				10%	15%	75%		
Scientific Services				80%	20%			
Regulatory Services	100%							(100%)
Doubtful Debts								100%
Capital Costs								
Raw Water Aqueducts			75%	20%	5%			
Water Treatment				80%	20%			
Water Storage				80%	20%			
Network - Interface		100%						
Network - Mains				67%	33%			
Water Management/General								100%

Notes:
Where changed by the Authority the bracketed entries equate to the cost driver assumptions used by Dŵr Cymru in its draft tariff model. For water management/general, Dŵr Cymru used allocated general and support expenditure as the headline cost driver.

7.16 The Authority has only changed two headline cost drivers for the AAC-plus model – for regulatory services and water management/general.

7.17 The Authority's view in the context of this case is that regulatory services are better allocated according to customer class volume. This better reflects the regulatory costs, most notably the costs of introducing competition to those eligible customer classes.

7.18 Also in the context of this case, the Authority believes that management and general costs (which will include the capital costs of offices and laboratories, depots and workshops, vehicles, telemetry systems and computers) are more fairly allocated by either customer class volume, direct costs (e.g. capital or capital plus operating) or turnover. In the AAC-plus model the Authority has used other direct costs as the headline cost driver.

7.19 Bad and doubtful debt costs are difficult to allocate across customer classes on the four traditional headline cost drivers identified in **Table 12a**. This common cost item is therefore discussed in more detail.

Bad and Doubtful Debts

7.20 The Tribunal stated *"it seems to us that there is a real issue as to whether doubtful debts, which apparently mainly relate to retail household customers, should be attributed, without qualification, to the transportation of large quantities of non-potable water to an industrial customer. This aspect was not investigated in the Decision"* (paragraph 545 of the Main Judgment).

7.21 Albion has restated "*it is still our understanding that debt is overwhelmingly a feature of household customers*" (letter dated 30 May 2007).

7.22 Dŵr Cymru has stated that "*we do not agree that doubtful debt costs should be related to differential rates of return. Of all the additional risks that a water undertaker faces in supplying larger customers we believe that the risk of non-payment, if indeed it is greater at all, is a relatively minor element*".

7.23 In the draft tariff model Dŵr Cymru used turnover as the headline cost driver for bad and doubtful debt costs. Dŵr Cymru has further stated that "[*T]he allocation of doubtful debt costs according to turnover is a reasonable approach in its own right and does not rely upon any view of differential risks"* and that "*customers who do not pay their bills represent a drain on company profit, in the first instance*" (letter dated 25 May 2007).

7.24 The Authority has no evidence that bad and doubtful debts "*apparently mainly relate to retail household customers"* (as suggested by the Tribunal). However, there is some evidence that customer class revenue may be the best cost driver for allocating bad/doubtful costs. This essentially means that every pound of outstanding revenue has an equal probability of "*going bad*". The

Authority understands this approach to cost allocation is also consistent with Dŵr Cymru's own internal accounting policy on bad and doubtful debts.

7.25 For the Referred Work, the Authority has therefore accepted that doubtful debts can, as suggested by Dŵr Cymru, be allocated by customer class revenue. And this approach may provide greater cost reflectivity[19] on this particular cost item.

7.26 In general standard tariff setting, doubtful and bad debts are normally allocated by volume as this particular cost item is treated by the Authority as a general, company wide, business risk. This is done for three primary reasons:

- Fairness (in simple terms, why should "good paying" customers in one customer class be solely responsible for bad paying customers in the same class; this cost item is slightly unusual in that it is not directly linked to the actual cost of water supply, the normal basis of establishing customer classes).

- Bill stability (if disaggregated in small customer classes - where individual customers have large bills, e.g. non-potable supply - the refusal of one large customer to pay[20] could result in major tariff fluctuations for the remaining "good paying" customers within the class. Industrial water bills may then also fluctuate as a result of ever changing macro-economic conditions).

- Income risk sharing (income risks are broad - inability/refusal to pay, customer bankruptcy/relocation with asset stranding, industrial production changes. Whilst different customer classes have different income risk profiles, by allocating on volume, these risks are assumed to “average out” and be broadly equivalent to the volumes delivered).

7.27 Introducing such a change (from customer class volume to customer class revenue as the headline cost driver for this item) to the normal regulatory method of allocating company bad and doubtful debts for the Referred Work will mean that other customer class income risks (e.g. that result in unexpected volume changes as a consequence of industrial customer bankruptcy/relocation/process change) will be picked up elsewhere in the AAC-plus model. This issue will be addressed by applying an income weight (see Step 4).

Step 3 - Application of customer class “cost” weighting factors

7.28 The Tribunal has stated that *“there are, generally speaking, significant differences between the potable and non potable supply*

[19] The limited evidence on customer class specific doubtful debts held by the Authority would support customer class revenue as a reasonable headline cost driver for trade debts.
[20] This is despite the ability of the company to disconnect.

systems under consideration in this case" (paragraph 458 of the Main Judgment).

7.29 The Tribunal also stated that the Decision "*did not take into account: 1. that, on average, non-potable systems are predominantly sited in more rural locations than potable systems; 2. whether distribution pumping occurs to the same extent on non-potable systems as on potable systems; 3. how far current cost depreciation on non infrastructure assets such as service reservoirs and distribution pumping not typically found, or found to a much lesser extent, in non potable systems should be charged to non-potable users; and 4. potential differences in costs as regards levels of investment, infrastructure renewals expenditure, maintenance costs and leakage expenditure as between potable and non-potable systems, largely as a result of regulatory requirements which apply to the former but not the latter*" (paragraph 538 of the Main Judgment).

7.30 These concerns are mainly addressed in this step of the AAC-plus methodology – primarily through greater cost granularity. The Authority's position on the cost weightings for the assessment is summarised in **Table 13**. There are a number of areas where the Authority has changed the initial cost allocation assumptions used by Dŵr Cymru in its draft tariff model (see bracketed figures where different to the Authority). The Authority has increased the weights for non-potable water treatment and the customer interface (which includes operational control), decreased the weights for non-potable distribution and storage and removed all pumping costs (by the application of 0% weights). These changes are discussed in more detail under each functional activity. As noted by Dŵr Cymru in terms of the cost weights "*the majority of customers (and most notably domestic customers) are usually 100%*" (letter dated 25 May 2007).

Table 13 - Cost Weighting Factors (applied in the AAC-plus model)

	Operating Costs	Capital Maintenance	Profit Attribution
Raw Water Aqueducts	0%(N/A)	100%	100%
Water Treatment	15%	27%	27%
Water Pumping	0%	0%	0%
Water Storage	5%(20%)	20% (48%)	20% (48%)
Network – "Customer Interface"	5000% (1000%)	1000%	1000%
Network – Bulk "Distribution Mains"	10%(20%)	29% (100%)	
Network - >600mm			50%(100%)
Network - 300-600mm			10%(100%)
Network - <300mm		0%	0%
Scientific Services	5%		
Bad and Doubtful Debts	100%		
Regulatory Services	100%		
Management & General		100%	100%

Raw Water Aqueducts

7.31 The Tribunal stated that *"in our view the non-potable systems here in issue cannot be so assimilated to any close extent, particularly because in such systems there is no distinction, or in the case of S6 and S10 no relevant distinction, between "raw water transport" and "distribution", because they are one and the same thing"* (paragraph 556 of the Main Judgment).

7.32 In terms of company average accounting costs, (and the AAC-plus methodology) this functional distinction is important. Typically raw water aqueducts may be shared between potable and non-potable customer classes whereas non-potable distribution mains are dedicated to the supply of the non-potable customer class. Therefore the Authority has split non-potable pipes between raw water aqueducts and non-potable distribution mains in the AAC-plus model.

7.33 Dŵr Cymru has argued that "*there is nothing intrinsic about non-potable supply that means that customers are located closer to (or indeed, further away from) water sources. If an argument were ventured along the lines that "non-potable systems have intrinsically shorter raw water segments" because the absence of a treatment facility on a system means that the whole of the pipe is classified as "distribution" from source, then it would also have to be recognised that, for the same reasons, "distribution mains" on non-potable systems are intrinsically longer. As a matter of fact it should be pointed out that some of the "raw water mains" on the non-potable systems are quite long, and it is by no means clear*

that a weighting factor, even if we did agree that one should be applied, would be less than 100%".

7.34 The Authority is of the view that the company's conceptual argument about comparative pipe lengths is correct. Indeed the Authority notes that the company average length of raw water aqueduct (per source) as a whole is around 2.5-3.5km (depending on whether groundwater sources are included in the regional average or not). This is actually shorter than the regional average length of raw water aqueduct (per source) of the non-potable customer class, which is around 5.6km. Although, the Authority also notes that this regional "average" for the non–potable customer class is largely driven by just two non-potable systems, S6 and S8.

7.35 For the Final Report, the Authority has assumed a weighting factor of 100% for raw water aqueduct capital costs. The Authority has applied a MEAV cross-check (see paragraph 7.126 below) to ensure that the AAC-plus model attributes a fair share of raw water aqueduct costs to the non-potable customer class. In terms of raw water aqueduct operating costs, the Authority has not been able to split out these costs from resource operating costs for the Final Report. The Authority has therefore assumed a weighting factor of 0%, noting that these operating costs can be picked up under non-potable distribution operating costs. Considering the comparative length of main (raw water aqueduct used to supply non potable distribution systems, 79 km, versus non-potable distribution mains, 138 km) and assuming network operating costs can be roughly correlated to pipe value, the attributable raw water aqueduct operating cost is likely to be below 50% of that attributable to the operation of the non-potable distribution system (as this will also include operations associated with non-potable storage and overall system control).

Water Treatment

7.36 There are only two non-potable treatment WTW. Treatment is provided for by chemical coagulation (using either aluminium sulphate or ferric sulphate) with the associated sludge being disposed of to sewer (at the smaller works at Ashgrove) or on-site (at the larger works at Court Farm). Sludge is thickened at both works (with further dewatering via belt presses at the larger works), prior to final disposal. In addition, at the larger non-potable water treatment works there is also chlorination and the ability to dose polyelectrolyte and lime (for pH control). The larger works is therefore slightly more complex than the smaller works (Dŵr Cymru letter dated 7 June 2007).

7.37 Dŵr Cymru had used a single weight of 30% for non-potable water treatment in its original AAC methodology (as developed by the company to derive the FAP). In the Decision, the Director adopted

15.2% as the non-potable water treatment weight but noted that he was surprised at the scale of the treatment weighting factor reduction (from the 30% used to derive the FAP to 15.2% to support its New tariff) proposed by Dŵr Cymru.

7.38 The Tribunal stated "*Mr Jones also queries whether the figure of 3.2 p/m³ used by the Director may have been an underestimate since it was based on a comparison of the relevant CCV values of a selection of treatment works. However we are sceptical of this latter suggestion, since the Director's figure of 3.2p/m³ was based on work that Dŵr Cymru itself put forward to justify the New Tariff*" (paragraph 317 of the Main Judgment).

7.39 Dŵr Cymru has updated its analysis on non-potable treatment cost weights (see end of this section for a copy of the company's draft report that was sent to the Tariffs Team at the Authority on the 5 March 2007). Dŵr Cymru has proposed two separate treatment weighting factors.

- For capital costs, Dŵr Cymru has "*calculated the ratio of the MEAV per Ml for non-potable works to the MEAV per Ml of potable works as at the date of the last Asset Inventory, 31/03/03, and obtained a figure of 33.6%*".

- For operating expenditures, Dŵr Cymru has "*calculated the ratio of direct (cost centre2) unit opex for the Ashgrove Works to the direct (cost centre) unit opex for the potable works, and obtained a figure of 20.8%*".

7.40 For the Final Report, the Authority accepts the possible revision of the (CCV based) non-potable water treatment cost weighting factor of 15.2%. The appendix to section 7 containing the Dŵr Cymru assessment of non-potable treatment costs is more robust than the previous (CCV based) justification provided by Dŵr Cymru. It is also more in line with the Authority's original expectations.

7.41 The Authority has now reviewed the updated non-potable treatment weighting analysis provided by Dŵr Cymru (see end of this section for copy).

7.42 Dŵr Cymru's proposed capital cost weight of 33.6% uses £0.106 m per Ml/d of capacity as the initial unit capital cost of non-potable treatment. However, this figure is based on a benchmark unit standard cost that is not directly comparable to the unit MEAV cost of £0.318 m per Ml/d adopted for potable treatment. The standard unit cost excludes three items: general infrastructure costs, sludge processing costs (thickening and dewatering) and chlorination costs (only applied at one of the works). These missing capital costs will add over 20% to the unit standard cost and the associated capital cost weight. The Authority has therefore increased the capital cost weight by 20% to 40.3%.

7.43 Dŵr Cymru's proposed operating cost weight of 20.8% is based on two important assumptions: 1. "*the unit costs at Court Farm non-potable are similar to those at Ashgrove*" (see draft company report on treatment weights); and 2. sludge disposal costs (between potable and non-potable treatment) are equivalent and can be ignored.

7.44 Dŵr Cymru has stated "*the type of [sludge disposal] strategy used at Court Farm, (i.e. full own-treatment and disposal) is generally the norm for our larger works, whereas discharge to sewer [as used at Ashgrove] would tend to be more attractive for smaller works*" (letter dated 7 June). On balance, the Authority believes that the second assumption is reasonable, especially noting these disposal costs (sewer disposal or on-site storage) are typically not included in the regulatory accounts. For example, Dŵr Cymru acknowledges "*in practice there is no re-charge across from the wastewater business to the water business*" (letter dated 17 May 2007). However, the Authority notes that this implies that all treated water supply costs (including partial water treatment costs) may be understated as water treatment sludge disposal costs (on-site lagoons/off-site sewer disposal) may not be fully charged to water service regulatory accounts and hence may not be fully included in the AAC-plus methodology.

7.45 Dŵr Cymru has indicated that the potable WTW at Court Farm had an operating cost of 5.86p/m³ (in 2005/06). Noting that this is higher than the potable average of 56 works and that the non-potable treatment side of Court Farm includes both chlorination and sludge dewatering (with additional chemical, power and manpower costs) the Authority believes the first assumption is not justified. The Authority considers that the operating costs associated with chlorination and (particularly) sludge dewatering will add over 10% to the assumed average non-potable operating cost of 1.13 p/m³. The Authority has therefore increased the operating cost weight by 10% to 22.9%.

7.46 Recently, Dŵr Cymru has stated that the average operating cost of 56 potable treatment works includes operating costs of some nearby abstraction works. Dŵr Cymru argues that with an appropriate adjustment for these misallocated costs "*the ratio would rise to 26.7%"* and *"in order to achieve a "like-for-like" ratio, the result would probably be closer to the capital cost ratio of 33.6%*" (letter dated 7 June 2007). In the time available, the Authority has not been able to consider the validity of this new evidence.

7.47 In the AAC-plus model, these weights are then adjusted to account for the fact that only 67% of the non-potable water delivered in 2000-01 was treated. This adjustment yields an operating cost weight of 15% and a capital cost weight of 27%.

Water Pumping

7.48 Whilst it is obvious (from **Table 6**) that extensive pumping is required on non-potable systems the critical question posed by the Tribunal was outlined in paragraph 520 of the Main Judgment.

7.49 Here the Tribunal stated "*moreover, what we are considering here is a common carriage charge for the use of the Ashgrove system. As Albion envisages it, the water in question would be supplied by United Utilities, and Albion would have to pay United Utilities for the pumping facilities at Heronbridge: in that scenario, the pumping at source would be part of the acquisition cost of the water, not its subsequent distribution. In those circumstances, to include "pumping at source" as part of the "distribution charge" for common carriage would apparently be requiring Albion to pay twice over, once to United Utilities and again to Dŵr Cymru in the "distribution charge" (although the Ashgrove system is, in fact, a "gravity main" without any pumping after the water in question passes from United Utilities to Dŵr Cymru)*".

7.50 The Authority agrees with the thrust of this statement in respect of the original AAC methodology that produced the indicative (and regional average) FAP, and the assessment of that original AAC methodology by the Director. The rather unusual water supply arrangements on the Ashgrove system (see **Table 1**) – where Albion can (and wants to) purchase both the water and the associated pumping function (low lift and high lift) from another party were not accounted for.[21]

7.51 The AAC-plus approach adopted here is one that goes into a greater level of granularity with respect to the functions for which access is required. However, it should be noted that under AAC-plus other functions/services explicitly required by Albion (as an integral or complementary part of the proposed non-potable common carriage supply service), most notably the back-up supply, will now also have to be identified and costed.

7.52 In the AAC-plus methodology, (by applying a 0% weight) the Authority has therefore excluded all pumping costs. Under a common carriage arrangement Albion would purchase the complete pumping function directly from United Utilities.

7.53 Dŵr Cymru has questioned the Authority's approach to pumping. Dŵr Cymru stated that "*on systems that deliver raw water to customers, the costs associated with any pumps that serve the dual purpose of both abstracting the water from the environment and providing the necessary pressure to deliver the water would fall to be divided between the water resources function and treatment function and the water distribution function*". Dŵr Cymru

[21] The Authority also notes however that raw water aqueduct costs were excluded from the FAP when, in the Authority's view, they should have been included.

has further argued that "*half of the ten non-potable supply systems have either "dual purpose" (i.e. both abstraction and distribution pumps, or (exclusively) distribution pumps, or both. And in light of this….we maintain that the weight of 80% for large non-potable users is appropriate in an AAC exercise…Certainly, though, and notwithstanding that the Ashgrove system is the largest of the non-potable systems that does not have any distribution pumping, we cannot understand why the draft assessment has used weights of 0% for this function*" (letter dated 17 May 2007).

7.54 The Authority maintains that the AAC-plus methodology now provides greater functional detail than the original AAC methodology. Distribution is no longer treated as one single function – it is split into a number of sub-functions, one of which is pumping. It is then possible, on a case-by-case basis, to decide whether pumping (or any other sub-function) is required by Albion and hence whether it should be included in the indicative access price. In this case, no pumping is required by Albion. A further issue is the extent to which these sub-functions (e.g. distribution mains) are further split into more granular sub-functions - either broad ones (e.g. local distribution mains vs trunk distribution mains) or more detailed ones (based on different sized diameter pipe bands). This issue is discussed further under water mains below.

7.55 To enable the Authority to consider the impact of this pumping feature in the original AAC methodology and how non-potable customers should be generally charged for pumping, the Authority has briefly considered the extent of pumping on non-potable systems generally.

7.56 The Tribunal has stated that *"we are not satisfied with Dŵr Cymru's suggestion that pumping at source should be treated as equivalent to "distribution pumping" on non-potable systems, when it is not so treated on potable systems. Moreover, it is common ground that Dŵr Cymru has 532 booster pumping stations which do not relate to non-potable supplies at all"* (paragraph 519 of the Main Judgment).

7.57 The Tribunal also stated that "*given that Dŵr Cymru has some 532 pumping stations, it seems likely on the evidence that the vast majority of pumping costs are not incurred in respect of non-potable systems*" (paragraph 521 of the Main Judgment).

7.58 The Tribunal further stated that "*with what appear to be very limited exceptions, these point-to-point systems do not seem to need distribution pumping or service reservoirs of the kind found in potable systems*" (paragraph 459 of the Main Judgment).

7.59 Dŵr Cymru argued, "[*W]e do not believe that there is an intrinsic difference between intake/source pumping on potable systems and*

pumping on non-potable systems. We have therefore not applied differential weighting factors for the purposes of cost allocation. We do not believe that there is anything intrinsic about booster pumping on a non-potable system that would make it more or less costly than booster pumping on a potable system".

7.60 Whilst the Authority accepts that the access price for the Ashgrove system should exclude all pumping costs with the possible exception of booster pumps the Authority considers that the premise that "*the vast majority of pumping costs are not incurred in respect of non-potable systems*" does not recognise the considerable pumping there is on non-potable systems. Over 65 pumps are directly attributable to the 10 non-potable systems (see Table 5 for location).

Water Storage

7.61 The Tribunal stated *"we are not satisfied on the evidence that these few storage facilities or tanks are in any realistic sense comparable to Dŵr Cymru's wide network of 715 service reservoirs for its potable supplies"* (paragraph 506 of the Main Judgment).

7.62 The Tribunal also stated *"it is not necessarily the case that the few storage facilities and tanks found on some non potable systems can automatically be equated to "service reservoirs" as that term is understood in potable systems or, a fortiori, that the costs incurred in respect of such tanks are the same as the costs of service reservoirs on potable systems"* (paragraph 507 of the Main Judgment).

7.63 Dŵr Cymru has argued that: "[*F]irst, we believe that lower weighting factor should be applied in respect of the service reservoir function for the high consumption customer classes. In general, our service reservoirs can be regarded as comprising two types: the larger "primary" or "supply" reservoirs and the small local "secondary" reservoirs. Large customers, typically, are connected to mains that are supplied from primary service reservoirs. Small commercial and domestic customers, typically, are connected to mains that are supplied by secondary reservoirs, which themselves have been supplied by primary reservoirs….. Of the five size bands of service reservoir provided for the Asset Inventory, we believe that primary service reservoirs would account for the all of bands 3, 4, 5 (>5 Ml capacity) and some (one third, say) of band 2 (1-5 Ml capacity). We would regard all of our few water towers as performing a "secondary" function. On the basis of this categorisation, primary service reservoirs would account for 48% by MEAV of our service reservoirs (and water towers) in the PR99 Asset Inventory…. Our regional average cost approach to pricing only seeks to differentiate in prices according to differences in cost drivers that are "intrinsic" to the service being supplied, and do not believe that there are any material intrinsic differences between the*

cost of providing a flow-balancing function on a potable system and a non-potable systems…. We do not agree with the suggestion that service reservoirs on non-potable systems might not need to be covered. I understand, in fact, that we would cover any service reservoirs on non-potable systems for safety reasons anyway, irrespective of the possible absence of the water quality considerations…..We consider that the weighting factor of 48% we are using for the largest customer class should be used for the large non-potable class".

7.64 Noting that large customers tend to supply most of their own storage function, the Authority agrees with the weighting factors applied to potable customer classes.

7.65 However, the Authority disagrees with the weighting factor applied to the non-potable customer class. As noted by the Tribunal, service reservoirs on potable systems require a high level of integrity and security. As noted by Latham[22] "*the majority of average to large service reservoirs are rectangular of reinforced concrete construction and covered, to prevent contamination, by a flat roof supported on columns*". Such roof costs have been estimated to be up to 50 per cent of the cost of conventional service reservoir construction (Institution of Water Engineers and Scientists).

7.66 Neither party was able to provide numerical evidence on differential water storage costs. The Authority has therefore prepared a comparative table (see **Table 14a** below) that describes the relationship between the capital costs for different types of storage vessel. It is based on the cost models that are contained in TR61 (cost information for water supply and sewage disposal, water research centre) which was published in November 1977. Despite the age of the report, since it is a comparison of relative capital costs, it is still appropriate to use these cost models to identify the scale of any potential differential storage costs. It clearly shows that storage tank integrity (e.g. especially the nature of vessel coverage) and material of tank construction (concrete or steel) is an important cost driver, as is the construction type (earth-bunded or lined) of any storage lagoon. This table confirms the importance of service reservoir roof costs – accounting for around 25-50% of vessel construction costs. Circular concrete tanks (or lined lagoons) appear to be around 50-75% of the cost of an equivalent sized "service reservoir".

[22] *An Introduction to Water Supply in the UK*, IWEM Booklet 4, 1994.

Table 14a - Relationship between the capital cost of a service reservoir and the capital cost of other storage vessels

Shape	**Rectangular**	**Rectangular**	**Circular**	**Circular**	**Lagoon**	**Lagoon**
Material	**Concrete**	**Concrete**	**Concrete**	**Steel**	**Lined**	**Clay Bunded**
Structure	**Covered**	**Covered**	**Uncovered**	**Uncovered**	**Uncovered**	**Uncovered**
Capacity	**Large**	**Small**	**Small**	**Small**	**Small-Large**	**Small-Large**
Ml	**22 to 114 Ml**	**0.2 to 7 Ml**	**0.4 to 14 Ml**	**0.4 to 14 Ml**	**0.5 to 2,800 Ml**	**2 to 38,000 Ml**
1		109%	64%	38%	50%	
4		87%	70%	41%	52%	16%
5		85%	70%	41%	53%	16%
10			73%	43%	54%	17%
15			75%	44%	54%	17%
25	107%				55%	17%
30	107%				55%	17%
Sample Nos	22	25	22	22	14	13
Capacity Exponent	0.62	0.48	0.70	0.70	0.67	0.68

Notes:
The "lined" lagoon category embraces a variety of impervious structures including: open concrete tanks with sloping walls, concrete floor lagoons and butyl-sheet lined lagoons.

7.67 The Authority is not persuaded that covering *"service reservoirs on non-potable systems for safety reasons"* is the equivalent, in cost terms, to the integrated concrete roof required (to ensure integrity) for service reservoirs on potable systems. This is an "intrinsic" capital cost difference driven by the different quality requirements of potable and non-potable customer classes.

7.68 In addition, the Authority notes that only 5 systems are actually served by "service reservoirs" (which may be covered), with the two largest systems being served by "open" storage vessels (a rented bitumen lagoon on S10 and a comparatively small "open tank on the customer side of the treatment process" on S6). The Authority further observes that the average residence time of non-potable storage is lower than that typically assumed on potable supply systems.

7.69 Dŵr Cymru appears to accept that "*there may be minor intrinsic differences in construction between service reservoirs on potable and non-potable systems*" but has expressed "*doubt whether these would be material*". Subsequently, Dŵr Cymru has also stated that "*from a hydraulic perspective, whether a new service reservoir is built to hold potable water or non-potable water makes little if any difference [to storage capital costs]*" (letter dated 25 May 2007). However, Dŵr Cymru recognises that there are operational

differences e.g. "*the requirement for disinfection on commissioning (and following significant maintenance work) would generally not apply*".

7.70 Albion has suggested that all non-potable storage vessels can be equated to unlined clay-bunded lagoons and that a 17% cost weight should be applied. On the results of the Draft Assessment, Albion has also stated "*it is difficult to understand the calculation that concludes that the AAC figure for storage is significantly greater than that for the Ashgrove system".*

7.71 The Authority believes that a typical non-potable storage vessel can be equated to either an open tank or a special lagoon (lined/concrete), but not a clay-bunded reservoir (which will require specific site conditions). Noting that some tank coverage (or other measures) may be required for health and safety reasons the Authority has reduced the non-potable capital cost weighting factors for water storage by 60% (to reflect the lower modern replacement costs on lower integrity storage vessels). In addition, the lower residence time (partly explained by non-use of any water storage on 3 of the smaller non-potable supply systems) supports a 30% reduction of this weight. The Authority has therefore used a weight of 20% (i.e. 42% of 48%) in the AAC-plus model. The operating cost weighting factor for storage is discussed below under the water mains heading.

Water Mains (Capital)

7.72 As noted by the Tribunal (see paragraph 450 of the Main Judgment) there are some confusing terms, so some caution is required. Previously the Authority has used bulk distribution mains to refer to mains over 600mm in diameter and trunk mains to refer to mains over 300mm in diameter. Whilst this broad definition is retained here, the Authority recognises the bulk distribution boundary, when defined by pipe diameter, is not clear cut.

7.73 The critical question, as identified by the Tribunal in paragraph 550 of the Main Judgment, is what "*is an appropriate comparator for determining the cost of non-potable systems*". Furthermore, the Tribunal stated "[*I]t is not shown that "average length of pipe" would be a secure basis on which to base a cost allocation between large non-potable users as a class and large potable users as a class*" (paragraph 482 of the Main Judgment).

7.74 Three alternative comparators have been proposed to determine the appropriate cost of non-potable mains: raw water aqueducts, potable mains (>600mm) and potable mains (>300mm).

7.75 **Raw Water Aqueducts:** Albion has strongly argued for raw water aqueducts as the most suitable comparator, whereas Dŵr Cymru has strongly argued for large potable mains. The Tribunal appears

to support the raw water aqueduct comparator (see paragraph 558 of the Main Judgment where the Tribunal stated that *"on the evidence before us, therefore, none of these factors significantly undermines the raw water comparator relied on by Albion"*).

7.76 The Authority objected to the use of the raw water aqueduct comparator because, on a company average basis, *"raw water aqueducts tend to be of shorter average length from source than are non-potable mains"* (see paragraph 557 of the Main Judgment). The Tribunal has stated that *"in our view we do not have sufficient hard data to verify the correctness of this argument"* (paragraph 557 of the Main Judgment).

7.77 The Authority still has a fundamental concern at the use of raw water aqueducts as the prime comparator. This objection is supported by regulatory information on the number of potable/non-potable sources and relative non-potable main/raw water aqueduct lengths. The Authority is concerned that using raw water aqueducts as the prime comparator for non-potable distribution would be, put very simply, similar to comparing the cost of travelling by train from Basingstoke to London with the cost of travelling from Glasgow to London.

7.78 **Potable Mains (>600mm):** The Tribunal has stated *"[S]ince some of the non-potable systems here in question predominantly use the larger pipes of 600mm or over, the parties have understandably sought to focus their arguments on various comparisons between the non-potable systems using only pipes of 600mm or over (or only pipes over 600mm) and that part of the potable system which, it is said, comprises only those larger pipes. The Tribunal is not persuaded that it should go down that road. That is not the approach used in the Decision. Moreover, to use that approach would involve a move away from regional average costs, whereas at this stage of the judgement it is regional average costs which we are considering. Moreover, as already explained above, the boundaries of the bulk potable distribution system are not clearly defined, including as it may 600mm and above, 300mm and above, and quite possibly pipes of smaller sizes"* (paragraph 463 of Main Judgment).

7.79 The Authority understands that the FAP (and the Director's Decision on the "fairness" of that price) was actually based on the use of larger pipes of 600mm or over. This is implicit in the way that the original average accounting cost methodology was applied by Dŵr Cymru and then modified by the Director. Furthermore regional average cost approaches can be based on the non-use of smaller sized pipes. This is normal regulatory practice in approving large user tariffs. It does not "*move away from regional average costs*" – rather it means that regional average costs for only 600mm mains are used to develop the associated large user tariff.

7.80 However, the Authority acknowledges that the "*boundaries of bulk distribution are not clearly defined*" and may embrace some pipes with diameters that are between 300-600mm. This observation by the Tribunal has been taken account of as part of the Referred Work.

7.81 **Potable Mains (>300mm):** In terms of geographic location, the Tribunal states *"[I]f it is to be made, in our view the comparison should be between the whereabouts of the relevant non-potable systems as a whole and the whereabouts of the potable mains over 300mm taken as a whole (assuming for argument's sake, that such mains are representative of "bulk" potable distribution)"* (paragraph 496 of Main Judgment). The Tribunal then notes (paragraph 497) that *"Dŵr Cymru's non-potable systems do not appear to contain anything closely comparable to the large potable mains network over 300mm which run through densely built up cities and other urban areas in South Wales….The issue at this stage is whether those costs should be borne in equal measure by large non-potable users whose systems lie predominantly in more rural areas".*

7.82 However, the Authority also notes that all parties had agreed that bulk mains (usually >600mm) should be the basis of any comparator and had focussed most of their written/verbal arguments on the larger (600mm) pipes. In the Authority's view, the assumption that all mains over 300mm are "representative of bulk potable distribution" is highly debatable – both from a technical perspective (the central "spider's web" of the 300mm mains do not constitute bulk distribution, only the extremities of the "spider's web" do), and a cost perspective (these 300-600mm mains were actually not used to set the FAP). The Authority is also concerned that the assumption also leads to erroneous comparisons.

7.83 For these reasons, the Authority is therefore of the view that bulk potable mains (>600mm) is the best comparator for bulk non-potable mains (>600mm). And, for this Referred Work, the Authority considers the bulk potable comparator (if expanded to include some smaller 300-600mm diameter pipes) is also relevant for all non-potable mains (that would also embrace both 300-600mm and >600mm diameter pipes). This would mean that the bulk potable comparator is not strictly based on equivalent pipe size but on equivalent pipe function – i.e. moving water in bulk from water source to large centres of demand. This bulk distribution function will embrace all pipes that are >600mm in diameter and some pipes that are between 300-600mm in diameter.

7.84 In its draft tariff model, Dŵr Cymru divided its water mains into two parts: "bulk" distribution mains (>300mm) and "local" distribution mains (<300mm). Dŵr Cymru then used the whole bulk network (>300mm) as the prime comparator for all non-potable distribution mains. This partly mirrors the position adopted by the Tribunal on

geographic location. In the draft tariff model for the non-potable customer class, Dŵr Cymru applied a 100% weight to all bulk mains (300-600mm and >600mm).

7.85 The Authority disagrees with this comparative approach. It attributes all trunk main costs (300-600mm) to the non-potable customer class. The Authority has therefore applied a nominal estimated weighting factor of 10% (rather than 100%) to the capital costs associated with 300-600mm pipes. This then includes only those 300-600mm potable pipes that truly fulfil a “bulk distribution” function (where bulk distribution involves transporting large quantities of water to single large users (or groups of large users) or to whole residential areas). This approach to mains weighting therefore excludes the majority of 300-600mm potable mains (that do not involve the bulk transfer of water to areas of substantial demand) from the comparison. These excluded 300-600mm potable mains may be equated to the central spider's web which might be located in more urban areas.

7.86 In addition, some account needs to be taken of the fact that bulk non-potable distribution mains (>600mm) appear to be smaller, on average, than their bulk potable equivalents. This can be done by comparing the average unit cost of bulk (>600mm) potable and bulk (>600mm) non-potable mains. On this basis, a weighting factor of 50% (£664 per metre divided by £1262 per metre) for bulk (>600mm) potable mains would be appropriate. These weighting factors (10% for 300-600mm pipes and 50% for > 600mm pipes) produce an AAC-plus model MEAV estimate for bulk non-potable mains that is broadly equivalent to that estimated by the Authority (using unit cost information provided by Dŵr Cymru in a letter dated 1 March 2006 to Dr Bryan and known non-potable distribution main lengths, see first attachment, CAJ-I, to the third witness statement of Christopher Alun Jones). This provides an important "sense check" on the non-potable main cost weights being applied.

7.87 Dŵr Cymru has strongly disagreed with the approach outlined above stating "*what the AAC approach does is to define and estimate "bulk distribution costs" for the whole company, and then to allocate those costs in accordance with one or more cost drivers, in this case peak hour, peak day and peak week demand. For the purpose of this approach, we adopt the convention that all mains in excess of 300mm in diameter are "bulk distribution", and all others are "local distribution": in many circumstances this will not hold, but we judge that it is a reasonable simplification to make, and that there is a reasonable chance that exceptions will broadly balance out one another. The allocated MEAVs of the assets that are attributed to "bulk distribution" may be more or less than the MEAVs of the actual assets used to carry out that function in a particular system or systems, for a variety of local geographical, historical, or topographical reasons*" (letter dated 7 June 2007).

Further commenting that "*once one step is taken on the AAC-plus road, unfair or biased results will emerge until the process is complete…other customer would reply "well in that case we shouldn't have to pay for the higher cost of capital associated with the large non-potable business segment either*".

7.88 The Referred Work is a standalone exercise in the context of this particular case and as such has no automatic consequence for general tariff setting. Furthermore, the non-potable customer class is also supplied by a series of discrete systems and is therefore unique (both in Wales and England). As a logical consequence of the increased cost granularity applied in the Referred Work, the Authority will apply a differential cost of capital for the non-potable customer class (see Step 4 below) in the AAC-plus methodology. The increased granularity of AAC-plus will also essentially split bulk distribution into more distinct network segments (>900mm, 600-900mm, 300-600mm).

7.89 Finally, on the point of geographic location, the Tribunal stated that *"this map evidence, although admittedly subjective to some extent, seems to show that, proportionally speaking, fewer non-potable mains are laid in urban areas than is the case with potable mains*" (paragraph 493 of the Main Judgment). After adjusting the non-potable network proportion to reflect the more rural raw water aqueducts (without doing the same for the potable network) the Tribunal stated that *"in our view, the balance of evidence shows that on average, in Dŵr Cymru's operational area, non-potable systems appear to be situated more in rural locations than is the case, on average, with Dŵr Cymru's large potable mains"* (paragraph 501 of the Main Judgment).

7.90 Dŵr Cymru stated that *"[W]e do not believe that any adjustment to weighting factors for the non-potable customer class is warranted in respect of location. As noted above, we believe that for the purposes of an average accounting cost allocation what matters is those cost factors that differ intrinsically as between potable and non-potable customers. We do not believe that there is anything intrinsic about non-potable supply systems that make them more or less "rural" than potable supply systems".*

7.91 Assuming that the comparison is based on all bulk (>600mm) potable mains (with a cost weight of 50%), and only the extremities of the 300-600mm potable mains system (with a cost weight of 10%), and noting the Tribunal's caution in using the map evidence, the Authority has made no allowance for differential bulk distribution main location. The comparability of the two non-potable distribution main MEAV estimates (by the AAC-plus model and by the Authority's check) supports these cost weighting assumptions.

Water Mains (Operating)

7.92 The Tribunal stated that *"on the evidence we have it is difficult to resist the conclusion that, over a 5 year period, systematically less planned or reactive maintenance is carried out on non potable systems as compared to potable systems"* (paragraph 535 of the Main Judgment).

7.93 The Tribunal also stated that:

- *"it appears to us that minimal maintenance is in fact carried out on the non-potable systems here in question" (paragraph 536 of the Main Judgment).*

- *"we have been provided with no evidence of any equivalent activity or expenditure associated with waste detection on non-potable systems" (paragraph 537 of the Main Judgment).*

- *"it seems to us likely that a conjunctive use system will require more central control systems and valves than a more simple point-to-point system" (paragraph 523 of the Main Judgment).*

7.94 In the AAC-plus model, water distribution operating costs are split into three separate categories: distribution - pumping, distribution - customer interface, and distribution - network. As noted above all distribution pumping costs are wholly excluded from the AAC-plus model results. This leaves the network and the customer interface operating cost categories.

7.95 The direct operating costs of the "distribution - network" relate to:

1. routine *repairs and maintenance* (the pipe network, service reservoirs, valves, district/zonal/customer meters, approximately 45% of the distribution - network cost envelope);

2. *operation and control* (e.g. asset management, asset inspections, valve operations and flushing, reservoir cleaning, sampling water quality, flow/pressure monitoring, in-pipe disinfection, approximately 30%); and

3. *leakage management* activities (approximately 25%).

7.96 The direct operating costs associated with the "distribution - network" cost primarily relate to the management and repair of the whole distribution network, including leakage management and service reservoirs. To reflect the fact that large customers tend not to be served off the local network Dŵr Cymru has suggested these customers *"should benefit from a substantially reduced weight*".

Dŵr Cymru further stated "*our judgement is that a weighting factor of 20% for the largest customer classes*".

7.97 Dŵr Cymru has also stated *"[t]he optimal level of leakage control that is carried out on a supply system depends, in principal, on the opportunity cost of the water lost… One way of seeking to quantify this potential difference might involve the modelling work that is used to support calculations of the economic level of leakage, in order to estimate by how much leakage control expenditure might fall if the opportunity cost of water were based on non-potable rather than potable supply systems…. We do not, therefore, believe that it would be appropriate to strip out and estimate of "leakage management" costs from the main RAG4 functional expenditure headings for the purposes of a cost allocation exercise, and do not, in any case, believe that doing so would have a material effect on the resulting allocations of cost to customer classes"*.

7.98 The direct operating costs associated with the "distribution - customer interface" relate to overall system control and customer ancillaries such as meters. In regulatory correspondence, Dŵr Cymru has argued that *"non-potable supply systems generally serve either one or two customers. There is therefore scope for the provision of more "personalised" or "tailored" services. This is reflected in the greater two-way interaction that exists between such customers and Dŵr Cymru's operators and customer representative"*. Meters for larger customers are also much more expensive and a higher weighting factor is required.

7.99 Dŵr Cymru therefore applied a weighting factor of 1000% in its draft tariff model to account for these increased customer interface costs (noting these interface costs are primarily driven by customer/connection number).

7.100 For "distribution - network" operating costs, the Authority has used a weighting factor of 35% for large potable customers on the trunk potable network (>300mm). This broadly correlates to the proportion of MEAV of the mains/service reservoirs that can be attributed to the trunk (>300mm) distribution system. For potable customers on the bulk potable network (>600mm), the Authority has maintained the weight at around 20% (the weighting factor used by Dŵr Cymru in its draft tariff model). This also reflects the proportion of the MEAV of mains/service reservoirs attributed to bulk (>600mm) distribution system.

7.101 For non-potable customers, the Authority has argued above that "service reservoir" and bulk distribution capital costs are likely to be 50% lower and (the Authority believes) this will translate into a similar % reduction in associated repairs and maintenance activity. In addition, it could be argued that the economic value of non-potable water (and hence the economic level of leakage

management) is, at least theoretically, some 50% lower as a result of reduced/no water treatment on non-potable systems.

7.102 On this basis, the Authority has therefore provisionally reduced the weighting factor for (bulk) “distribution - network” operating costs by 50% (from 20% to 10%) for non-potable customers to account for potentially lower levels of service reservoir repairs & maintenance (and associated operational expenditure) and potentially lower leakage management activity.

7.103 The Authority notes that this weighting factor reduction also implies that the bulk mains repair and maintenance and associated bulk mains operation and control costs (e.g. for asset management, asset inspections, valve operations and flushing, reservoir cleaning, sampling water quality, flow/pressure monitoring, in-pipe disinfection) for non-potable distribution is also assumed to be 50% of bulk potable distribution costs. However, as has been noted by Albion, a number of these operational activities are either not required (e.g. sampling water quality) or at least not required to the same extent as on potable systems.

7.104 Applying this reduced weighting factor of 10% yields an annual “distribution-network" direct operating cost of around £10,000 per non-potable system per year. This modelled operating cost covers both the mains and the associated storage vessels. Noting that in the AAC-plus model there is no allowance for associated non-potable raw water aqueduct operations (associated with 79 km of pipes used to feed 3 non-potable systems); this appears to be a reasonable assumption for the Final Report.

7.105 For "distribution - customer interface", the Authority has increased the company proposed weight from 1000% to 5000% to account for the need/requirement for greater direct operational control/interfacing on non-potable systems. This decision has been informed by the local operational costs of the Ashgrove system (S10).

Water Mains (Infrastructure Renewals)

7.106 The Tribunal stated that “*in this particular case the permanent need to invest in upgrading the quality of the potable system does seem to us to be likely to have increased distribution costs of potable systems relative to the costs of non potable systems*” (paragraph 534 of the Main Judgment).

7.107 The Tribunal noted that *“it is contended by Dŵr Cymru that the bulk of this expenditure relates to mains of smaller sizes within the “local” distribution system, but we are unable to verify this suggestion.”*

7.108 Dŵr Cymru stated that "[*I*]*f the infrastructure renewal costs to be allowed in prices to non-potable customers were to be based on actual recent expenditure, then prices for those customers would be comparatively low in periods when there happens to be little or no capital maintenance expenditure, and comparatively high when the reverse is the case. This would be difficult to justify, partly because of the apparently arbitrary volatility in pricing that would ensue as a consequence, and more particularly because the infrastructure renewals approach to capital maintenance is intended to be forward-looking*."

7.109 Accordingly *"the level of serviceability of our non-potable distribution systems has not been specifically measured for 2000-01 or any other year. Nor would there have been a specific exception as to what expenditure would have been necessary to maintain serviceability for these individual pipes. For the purposes of cost allocation we have taken the view that there is no material intrinsic difference between the long-term maintenance expenditure requirements of potable and non-potable systems, and this would be reflected in the relevant cost allocation rules*."

7.110 Dŵr Cymru has further commented in regulatory correspondence that "*the water quality-driven mains investment programme focussed upon unlined iron mains, which tended to be fairly old in any event. Further the overwhelming majority of the mains that were covered by the programme were smaller diameter "local distribution" mains….and….that the programme is almost complete*."

7.111 The Authority notes that infrastructure renewals accounting regards the whole quantum of individual assets as a single infrastructure asset. Infrastructure renewals accounting is therefore based on an operational assessment of activity needed to maintain the serviceability of the whole underground infrastructure over a reasonably long period (typically in excess of 15 years).

7.112 Based on the ongoing quality investment programme, in 2000-01, there might have been a case for applying a differential allocation of infrastructure renewal costs between the local and trunk mains (as some local mains were renewed prematurely). Given the long asset lives (in relation to the quality programme) even the need for this possible differential cost allocation is not clear-cut. In terms of differential renewal rates between bulk potable mains and bulk non-potable mains, the Authority believes there is no material difference in infrastructure renewal rates over the long term. To include such a differential would imply that non-potable bulk mains somehow had longer physical asset lives than their bulk potable equivalents. This assumption remains unproven.

7.113 It has been suggested by Albion that, in reality, raw water aqueducts (and non-potable distribution mains) are always

"*sweated*" harder because they are considered less critical. However, this suggestion is not supported by regulatory information on relative pipe condition. If the proposition made by Albion was correct the Authority would expect to see a noticeable difference in pipe condition. However, in 2004 the pipe condition of raw water aqueducts, non-potable mains and potable mains was broadly similar. Introducing an infrastructure renewals differential (between potable and non-potable distribution mains) would also imply that the physical asset life of non-potable pipes is in excess of 175 years. Again there is no evidence to support this physical life assumption.

7.114 To provide clarification, the Authority also notes that regulatory information included by Albion was not correctly referenced in respect of the exact nature of the information. The Tribunal noted that "*it appears from Table A that the years 2000/01 to 2004/05 there has been no renewal or refurbishment of such mains [raw water aqueducts], in contrast to approximately £60 million per annum that Dwr Cymru has been spending on potable mains*" (paragraph 528 of the Main Judgment).

7.115 The prime reason for this apparent disparity is that, unlike for potable mains, only investments in raw water aqueducts over certain thresholds have to be reported to the Authority. Indeed, over the period, in question 14, other companies reported zero investment in raw water aqueducts over the same period. Many companies only had investment entries on raw water aqueducts for just one year over the period considered by the Tribunal. This data says more about the regulatory reporting threshold than any fundamental difference in renewal rates between raw water aqueducts and potable mains. This problem of different reporting definitions was explicitly identified by Christopher Alun Jones in his third witness statement (paragraph 47).

Scientific Services

7.116 Scientific service costs embrace three main broad activities: operational scientific services, provision of laboratory services and quality review activities. The Authority considers that some of these costs might be wholly or partly attributable to non-potable customers (most notably those receiving partial water treatment).

7.117 Dŵr Cymru has stated in regulatory correspondence that "*there is much less sampling on non-potable systems. We do however, have quality obligations to some of our non-potable customers, and we also sample on some non-potable systems for operational purposes. We therefore believe a significantly lower weight should be attached to this cost driver for the non-potable class*".

7.118 Dŵr Cymru applied a weighting factor of 5% for scientific services. Dŵr Cymru stated that "*this reflects that fact that the measurement*

and management of water quality is (and has been) carried out on a high proportion of non-potable volumes, albeit that the water is not intended to meet the statutory standards of wholesomeness".

7.119 In terms of operational scientific service costs, the following items might be attributable to partial water treatment: investigation of source quality (to ensure appropriate dosing measures are taken at the WTW, especially during flash flooding events); investigation (and review) of water treatment plant performance and monitoring of associated sludge disposal; advice on use of chemicals in water treatment and safety of personnel; and data handling associated with provision of scientific support. The Authority also understands that the quality of the non-potable water is often monitored for a limited range of parameters. In terms of provision of laboratory services the majority of these activities are provided on-site at the two partial WTW. These activities include: establishing monitoring procedures; chemical analysis of samples from WTW; management of laboratory equipment; and reporting of results.

7.120 The Authority agrees that the focus of scientific service activities is primarily "*associated with the measurement and management of water quality* and that most of these water quality monitoring costs are largely attributable to the potable customer classes. The Authority therefore accepts Dŵr Cymru's proposed nominal cost weighting factor of 5% for the non-potable customer class.

Cross-Checking (the internal workings of the AAC-plus model)

7.121 The Authority requested that Dŵr Cymru, wherever possible, "*should look for, and provide, any information on local operating costs, local capital maintenance costs, local profits and local accounting evidence on common costs*" (see AAC Information Request). The Authority could then cross-reference the individual AAC-plus modelled (regional average) cost estimates to those developed from a local cost perspective.

7.122 Dŵr Cymru responded that *"there is in any case, no cost centre information that would enable such an exercise to be carried out. The submission made under copy of the letter from Wilmer Hale to the Tribunal of 20 March 2006 carefully explained the basis for cost centres in a water business, and their purpose (see pages 7-10). In particular, it is explained that none of the ten non-potable systems described in Chris Jones' first witness statement had its own cost centre, though some had a cost centre for one part of the system*".

7.123 To cross-check the workings of the AAC-plus model, the Authority also asked Dŵr Cymru "*to provide separate MEAVs for each of your discrete non-potable systems in 2000-01*" (see AAC Information Request).

7.124 Dŵr Cymru "*addressed this question by identifying within the time available what components of the ten systems we can, and calculating a total MEAV based on that subset. The resulting figures can therefore safely be regarded as an under-estimate. This figure, £99.0m, comprised the following components."*

Table 15 - Summary of the MEAV of the Ten Non-Potable Supply Systems

Asset Type	**Description**	**Total MEAV £m 1997/98 prices**	**Share of non-potable systems £m**
Source/intake pumps	39 pumps (av 473kW)	39.1	13.1
Raw water reservoirs	1 reservoirs	0.8	0.4
Raw water mains	79km	50.7	13.2
Dual purpose[23] pumps	7 pumps (av 31kW)	1.0	1.0
Treatment works	2 works	9.2	9.2
Distribution mains	138km	45.0	45.0
Service reservoirs	3 service reservoirs	7.4	7.4
Distribution pumps	11 pumps (av 87kW)	2.8	2.8
Total		156.1	92.5
Total in 2000/01 prices[24]			99.0

7.125 Dŵr Cymru also noted that:

- *"all MEAVs have been derived using standard 1998 Asset Inventory unit costs;*
- *where assets are common to potable systems and non-potable systems, asset values have been allocated pro rata to volume;*
- *following clarification given by [the Authority] at the meeting on 20th February, we have included "stranded" assets, notably three significant lengths of non-potable distribution main.*
- *where the specifications of an asset are not available, they have been excluded from the calculations. Excluded assets include six reservoirs (both impounding, and service) and at least two*

[23] Pumps which both abstract water (e.g. from a borehole) and pump the water uphill to customers.
[24] Year end RPI 1997/98: Year end RPI 2000/01: 172.2.

pumps, as well, as more generally, miscellaneous civil structures such as pump houses, the boreholes themselves, all meters, connections control equipment, and telemetry. Further, it is worth re-iterating that "real life" factors which drive up costs are assumed away for the purposes of the MEAVs that are calculated for the Authority Asset Inventory purposes.

- *we have made no allowance for complex mains structures, but have noted that there are at least ten rail crossings and over twenty river crossings on the non-potable supply systems".*

7.126 Despite these substantial caveats, with appropriate adjustments (discussed below), **Table 13** provides an important cross-check on the weights used in the AAC-plus model as the model itself estimates the MEAV of the assets that serve the non-potable class.

7.127 The Authority has removed the non-potable distribution assets that were stranded in 2000-01 from the MEAV cross-check. The Authority has also adjusted the weight (the proportion of volume) that has been applied by Dŵr Cymru to assets that were shared with potable customer classes (most notably the pumps and raw water aqueducts on S6 and S8). The Authority has assumed that such pumps and pipes will be constructed to only supply the connected non-potable customers.

7.128 The Authority also notes that the main MEAV estimates (for both raw water aqueducts and non-potable distribution) provided by Dŵr Cymru are based on standard unit costs and not the unit costs used by Dŵr Cymru to estimate company wide MEAVs. As Dŵr Cymru has stated previously "*it is important to remember that there are important differences between the context for preparing quotations for [the Authority's] standardised cost base projects……and the context of estimating modern equivalent asset values*" (letter to Dr Bryan dated 1 March 2006, see attachment to third witness statement of Christopher Alun Jones, CAJ-3). The Authority has taken appropriate account of the differences between standard unit costs and MEAV unit costs.

7.129 A material difference between the MEAV estimated by the Authority and the MEAV estimated by the AAC-plus model would indicate a problem with the capital cost weighting factors being applied. This means of cross-checking the cost allocation assumptions (most notably the cost weighting factors) used in the AAC-plus model is not normally available to the Authority as most water assets are integrated (and assets are used jointly) and so customer class specific MEAVs are usually impossible to calculate on a bottom-up basis).

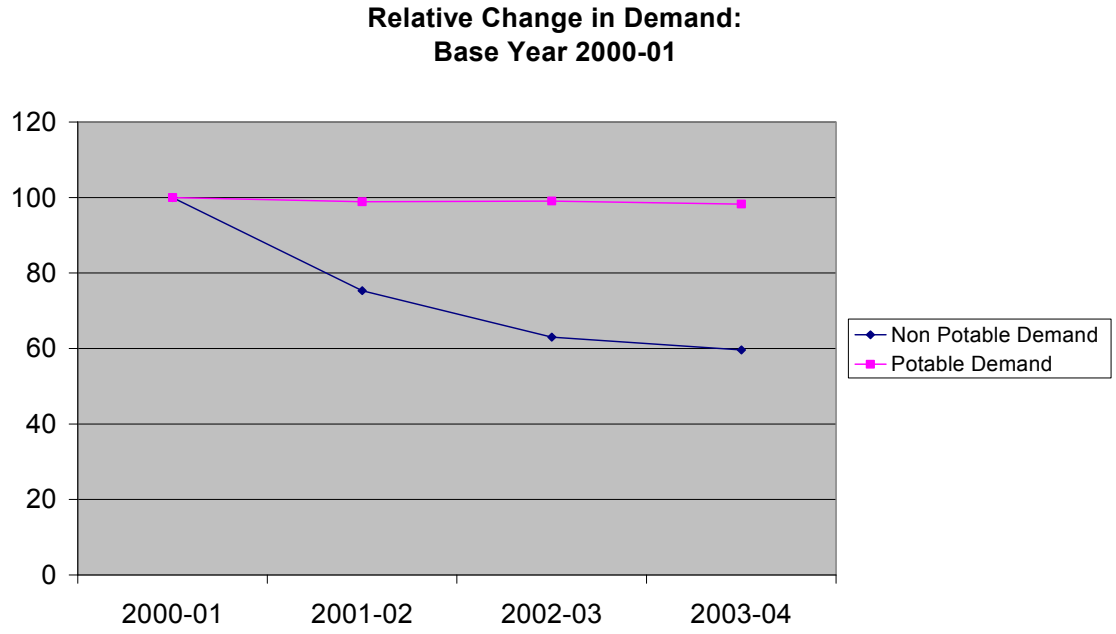
Step 4 - Application of customer class "income risk" weighting factors to correct for underlying customer class revenue risk differentials

7.130 In regulatory correspondence, Dŵr Cymru has restated its position on differential customer class risks.

7.131 Dŵr Cymru believes that *"…there are two particular features of large non-potable customers that distinguish them from large potable users and make the non-potable business more risky. First, they are invariably large industrial manufacturing concerns that operate in sectors with uncertain long-term prospects. By contrast, the large potable sector is more heterogeneous and includes customers in the services and government sectors that have, in general, more secure long term prospects. Second, the non-potable customers are served by dedicated supply systems with a high risk of partial or total stranding. By contrast, large potable customers tend to be connected to more extensive supply networks which predominantly supply domestic and small non-domestic customers, so the risk of assets being stranded by the closure of a single customer is either small or non-existent*."

7.132 The change in average annual demand (based on volumes in 2000) of all non-potable customers (except Shotton Paper) is profiled in **Figure 2**. This can be contrasted with the change in average annual demand of all Dŵr Cymru's potable customers. It is evident that the market for non-potable water in Wales (in contrast to potable water) has declined rapidly in recent years. This clearly highlights the different revenue risks that are faced by Dŵr Cymru in serving this particular customer class.

Figure 2



7.133 Dŵr Cymru has "*observed movements in volume do not necessarily provide evidence of greater or lesser risk: what is relevant is what forward-looking perceptions of a supplier and its investors would be*" (Dŵr Cymru letter dated 26 March, response to Q4). The Authority agrees. However, the Authority believes investors would also look to the past to inform their investment decisions. Faced with these contrasting historic demand (and hence revenue) profiles they would, if there was a separate capital market for potable and non-potable supply businesses, take into account the different risk premiums they would require to invest in such different market conditions. Furthermore, the very nature of the industries that use large volumes of non-potable water are open to the vagaries of globalisation and opportunities to shift production to other locations. This is illustrated by an oil company that recently closed down a particular refinery that was supplied by non-potable system S8. This has "*led to the stranding of several kilometres of water main together with a portion of the upstream supply capacity*" (Dŵr Cymru letter dated 26 March, response to Q4). Indeed, the Authority notes that around 20% of non-potable distribution mains have been stranded in recent years.

7.134 The Authority also notes that the majority of Dŵr Cymru's non-potable customers' ratings have "*junk status or have no credit rating at all*", increasing the revenue risks of the non-potable supply "business" even further.

7.135 It is the Authority's understanding that the Tribunal appears to agree with the increased revenue risks (and associated increased cost of capital) of discrete non-potable water supply systems (as typically used to supply non-potable customers in Wales). With regard to the Ashgrove system the Tribunal notes "*As to risk, Dŵr Cymru points out – **and we accept** – that any such pipeline would have no customers other than Shotton paper and Corus. If both or either of these customers were to shut down, the pipeline would have no alternative use. That would make the construction of such a pipeline a high risk project, with the consequence that capital would have to be raised at a high risk-related rate of return. Dŵr Cymru further points out that neither of the customers in question have strong credit ratings…thus adding to the risk*" (paragraph 139 of the Further Judgment, emphasis added).

7.136 The Tribunal also recognises that, in terms of the number of customers served, the Ashgrove system is not unusual. The Tribunal stated that "*all the non-potable systems under consideration in the present case are simple, discrete supply systems through which very large quantities of raw water flow, typically in large diameter pipes, from a single source (sometimes two sources) to **one or two large customers***" (paragraph 458 of the Main Judgment, emphasis added). Hence the above revenue risks (identified by the Tribunal in the preceeding paragraph) apply to all non-potable systems.

7.137 However, in its Main Judgment, the Tribunal has also stated that "*although Mr Jones suggested that in some way its industrial customers were "higher risk" we have received no evidence of the relative risk of industrial customers as compared to household customers. In any event it has never, as far as we know, been suggested that Dŵr Cymru is entitled to earn a higher rate of return in respect of assets used to supply some customers rather than others*" (paragraph 591 of the Main Judgment).

7.138 In addition, "*the Tribunal accepted that such a project would undoubtedly be "high risk", and might well require a prospective return of that order [17.5 per cent] before anyone would undertake it. What the Tribunal did not, however, accept was the proposition that any such approach could be used as a basis for calculating the common carriage charge for the use of the existing pipeline. To seek to do so would be illogical, contrary to the policy of promoting common carriage, and discriminatory*" (paragraph 58 of the Refusal Judgment). Based on this position, "*the Tribunal used, **for illustrative purposes**, the rate of return **on MEA values** of one percent (rather than 17.5 percent) that Dŵr Cymru had itself used when calculating its Large Industrial Tariff in 1999 which, in turn, formed the underlying basis for reasoning on distribution costs in the Decision*" (paragraph 58 of the Refusal Judgment, emphasis added).

7.139 The Authority notes that these increased revenue risks do not depend on who owns the pipeline or indeed when it was built. Furthermore, as each distinct non-potable distribution main tends to supply only a limited number of customers these increased revenue risks will be apparent on each non-potable system. In other words, the revenue risks are an inherent feature of the discrete non-potable water supply arrangements in Wales. The logical consequence of this feature is that a differential cost of capital may need to be allowed for in regulated prices to non-potable customers to reflect these differential revenue risks.

7.140 For example, the Tribunal stated *"[T]o treat a class of customers (here, for non-potable water) as the same as another class of customers (here, for potable) where the costs are significantly different would, in the absence of objective justification, be discriminatory*" (paragraph 251 of the Further Judgment). It is apparent that the cost of capital for the non-potable customer class in Wales is potentially significantly different to other potable customer classes. In particular in view of the Tribunal's statements, in the context of this case and the Referred Work, the Authority's view is that it would not be appropriate to apply the company average cost of capital to this customer class, especially in the context of an excessive pricing test.

7.141 (However, the Authority notes that to date in its regulatory work different customer class revenue risks have not been explicitly

recognised. In the past these differential (customer class) revenue risks have been catered for by the Authority's tariff allocation policy on doubtful debt costs (i.e. they have been treated as a general business cost and allocated on the basis of volume).)

7.142 Dŵr Cymru has argued that "*these considerations are not relevant to an excessive pricing test*" and that "*if, as it appears, [the Authority] believes that the correct assumption is that required rates of return differ, then it would be wrong not to apply that view to the assessment of costs for the purposes of the excessive pricing test….There need be no contradiction between using one, strictly correct, assumption for the excessive pricing test, and adopting a different "default" approach, for good reasons, in the general regulation of undertakers tariffs*."

7.143 In the context of this Referred Work, and to reflect the unique circumstances of non-potable water supply in Wales, the Authority proposes to allocate doubtful debts according to revenue and to use a differential cost of capital of 8.0% (see Section 6B1 on the cost of capital).

7.144 In 2000-01 this cost of capital would have equated to an income weight of 2.2. This income weight has therefore been applied in the AAC-plus model.

7.145 For the reasons set out in Sections 5 and 6B(3) above, the Authority's view is that the back-up supply should be included in the AAC-plus methodology and the cost amounts to 4.4p/m^3.

7.146 For the reasons set out in Sections 5 and 6B(2) above, the Authority's view is that common carriage services should be included in the AAC-plus methodology and that they amount to 0.3p/m^3 .

Results of the AAC-plus Methodology

7.147 The results of the AAC-plus methodology are summarised in **Table 16.** More functional detail is provided in **Table 16a**.

Table 16 – Results of the AAC-plus Methodology

	AAC
Raw Water Aqueducts	1.2
Water Treatment	5.3
Bulk NP Distribution	2.6
Water Storage	1.0
Business Activities	2.4
General & Support	2.1
Potable Back-Up Supply	4.4
Common Carriage Services	0.3
Total	19.3

7.148 Business activities includes: regulatory services (0.2p/m³), scientific services (0.1p/m³), bad and doubtful debts (0.7p/m³) and local authority rates (1.4p/m³). General and support includes: general and support expenditure (1.5p/m³) and management and general capital charges (0.6p/m³).

Table 16a – Functional Cost Breakdown

Function	**Operating Costs (p/m³)**	**Capital Costs (p/m³)**	**Total (p/m³)**
Raw Water Aqueducts		1.2	1.2
Water Treatment	1.8	3.5	5.3
Network-Interface	0.3	0.1	0.4
Network-Operation	0.5		0.5
Network-Bulk NP Distribution		1.7	1.7
Water Storage		1.0	1.0
Total	2.5	7.7	10.1

APPENDIX TO SECTION 7

Dŵr Cymru Draft Report: Revised Estimate of the Ratio of Partial to Full Treatment Costs for Cost Allocation/Pricing Purposes (5 March 2007)

Introduction

7.149 *For the purposes of calculating the indicative access price in 2001, Dŵr Cymru used a figure of 30% as the assumption for the ratio of non-potable to potable treatment costs. It is believed that this "rule of thumb" had been applied by the company for many years.*

7.150 *When the new large non-potable industrial tariff was introduced in 2003 an attempt was made to provide an up-to-date estimate of the ratio of partial treatment to full treatment costs. Specifically, the average capital costs of the two partial treatment works (Ashgrove and the industrial side of Court Farm) were compared with the average capital costs of ten potable works of similar size, on a "per unit of throughput" and a "per unit of capacity" basis. The former calculation yielded a figure of 14.4%, the latter 16.1%. Dŵr Cymru took the average of 15.2% as the basis for its new tariff. It was on this basis that the Authority criticised the figure of 30% that had been used in the calculation of the indicative access price, although the apparent "discrepancy" could have been at least partly explained by the movements in relative costs.*[25]

7.151 *With the benefit of hindsight, however, it is clear that the 2003 analysis was not as thorough and robust as it could have been. Most significantly, for the purposes of assessing the "capital cost" of the various works, it used figures for "current cost value" (CCV), essentially the costs to Dŵr Cymru of building and augmenting each asset over the years, indexed by RPI to the present day. Whilst not unreasonable in itself as an approach to the typical capital costs of the different kinds of works, this method produced misleading figures for the Ashgrove works because, uniquely, that works was not built by Dŵr Cymru and so the resulting estimates did not include the costs of its original construction. The CCV of £1.45m for Ashgrove, therefore, was less than half of what it should have been.*[26, 27]

7.152 *In addition, the analysis ought, perhaps, to have looked at relative operating expenditure for partial and full treatment as well. The question has also been raised whether or not it was reasonable to limit the potable treatment works sample in the exercise to 10*

[25] Since 1990, potable treatment costs have risen in order to meet new water quality standards, so the ratio of partial treatment to full treatment would be expected to have fallen, all else equal.

[26] On the basis that "CCVs", as defined by Dŵr Cymru for the purposes of that exercise, could reasonably be expected to be similar (or higher) than MEAVs, one would have expected the estimate to be at least £3m (see Jones 2 Annex 4).

[27] It is also worth noting that the Authority, at least, had been suspicious of the 15.2% figure. At paragraph 294 of the Decision it is explained that, if anything, they had thought that the previous 30% assumption might have been on the low side.

works, albeit that between them they accounted for over a quarter of total works output.

The Revised Calculation

7.153 *In order to inform a range of pricing questions, a new estimate of the ratio of average partial treatment costs to full treatment costs has been produced by Dŵr Cymru. It seeks to improve upon the work that supported the previous 15.2% figure, in part by calculating different ratios for capital costs and (direct) operating expenditures and by addressing the perceived shortcomings in the earlier calculation. The company's cost allocation modelling work allows for different assumptions to be used.*

The Capital Cost Ratio Calculation

7.154 *The capital cost ratio calculation produces a figure of 33.6%, derived as follows. As with the 12 works study carried out in 2003 referred to above, unit costs were calculated on a "per Ml of capacity" and a "per Ml of throughput" basis. However, unlike the 12 works study, which derived "unit current cost depreciation costs", this calculation simply looks at unit MEAV per Ml, and includes all of the company's potable treatment works. Since the 12 works study made exactly the same assumptions for all 12 works for asset lives and the ratio of civil components to mechanical and engineering, the results are unaffected by adopting this simplification.*[28]

7.155 *The calculation was carried out as at 2003/04, because this is the period for which all the required information is available.*[29]

7.156 *For potable treatment works the total MEAV shown in the company's Asset Inventory, as at 31 March 2003, was £476.29m (2002/03 prices).*[30] *According to internal planning analysis, the capacity of those works in 2003/04 was 1,500 Ml/d, and the average throughput was 930 Ml/d, giving an average unit MEAV of £0.318m per Ml/d on a capacity basis and £0.512m per Ml/d on a throughput basis.*

7.157 *For non-potable treatment works, unit MEAVs were examined in some detail in Annex 4 of Chris Jones' second witness statement produced in early 2006 for the Tribunal. It was noted that the range of dispute over the right estimates to use was relatively narrow.*[31] *For the purposes of this calculation, the Authority's unit cost of £0.106m per Ml/d of capacity in 2003/04 prices has been*

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[28] If, for whatever reason, the required rates of return on capital for non-potable and potable treatment works were thought to differ, then a further adjustment to the results would be warranted.

[29] This is primarily because of all the work that was being carried out in preparation for the 2004 price determinations.

[30] Table C11a, sum of lines 3 – 10.

[31] That is, as between Dŵr Cymru's Business Plan submissions, the Authority's figures as presented in the Decision, and Albion's estimates.

used. Deflating by one year's RPI information gives a unit MEAV in 2002/03 prices of £0.103m per Ml/d of non-potable treatment capacity.

7.158 *To derive a unit MEAV on a throughput basis, it is necessary to adjust for the "peaking" or "load" factors of the two non-potable treatment works. Their combined capacity at the time was estimated at 102 Ml/d[32], giving a total MEAV of £10.5m. Total throughput, in 2003/04, was 59.2 Ml/d[33], giving an average unit MEAV per Ml/d of throughput of £0.178m per Ml/d.*

7.159 *The ratio of partial treatment to full treatment capital costs on a capacity basis was therefore 0.103/0.318, or 32.5%, and the ratio of partial treatment to full treatment capital costs on a throughput basis was 0.178/0.512, or 34.7%. The two figures are quite close together. Nonetheless, as with the 12 works study, it is suggested that an average of the two, i.e. 33.6%, is used for modelling purposes.*

The Operating Expenditure Ratio Calculation

7.160 *For the operating expenditure ratio calculation figures for direct site-specific operating expenditure per Ml/d of output were used. Although this means that the ratio is calculated on the basis of a subset of water treatment operating expenditure, it is not considered that this is unreasonable. In effect, the implicit assumption being made is that indirect operating expenditure (essentially overheads and other support costs) would follow the same ratio.*

7.161 *The operating expenditure ratio has been calculated for 2005/06 (the last year for which figures are available).*

7.162 *Most of Dŵr Cymru's WTW have their own cost centre, which means that their direct operating expenditure can be readily ascertained. These include Ashgrove, for example. However, the non-potable treatment carried out at Court Farm shares the same cost centre as the potable works, which means that some assumptions have to be made.*

7.163 *For 2005/06, the cost centres for 56 potable treatment works, generating 766.3 Ml/d of output,[34] accounted for total expenditure of £15.1m, an average of 5.42p per m^3.*

7.164 *In the same year, total expenditure for the Ashgrove cost centre (including power) was £90,571, and output was 22.0 Ml/d, an average of 1.13p per m^3.*

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[32] The capacity of Ashgrove was 32 Ml/d (see Jones 2) and the capacity of the non-potable works at Court Farm was 70 Ml/d (see the 12 works analysis).

[33] Throughput at Ashgrove in 2003/04 was 8,822 Ml over the course of the year, equivalent to 24.2 Ml/d. The figure of 35 Ml/d for Court Farm is taken from the 12 works analysis.

[34] In calendar year 2005, this represents almost 90% of total potable output in that year.

7.165 *As noted above, there is no separate cost centre for the Court Farm non-potable works, so it is necessary to make an assumption. One approach is to assume that the unit costs at Court Farm non-potable are similar to those at Ashgrove, i.e. 1.13p/m^3. Given that overall expenditure at the works is known, an estimate of the unit costs of the potable side can be inferred. This gives a figure of 5.86p/m^3 and, since this is of a similar order of magnitude to the figure of 5.34p/m³ referred to above, this would appear to provide some corroborative support for the assumption that the unit costs at the two works can reasonably be regarded as being the same.*[35]

7.166 *On this basis, therefore, the ratio of the unit operating costs of partial treatment to full treatment is estimated to be 1.13/5.42, or 20.8%.*

[35] If anything, the fact that the implied unit cost of Court Farm potable is higher than the average for Dŵr Cymru's other works suggests that the assumption of 1.13p per m^3 for Court Farm non-potable is more likely to be too low than too high.

8. DETAILED DESCRIPTION AND APPLICATION OF THE LRIC METHODOLOGY

INTRODUCTION

8.1 The Long Run Incremental Cost (LRIC) measures the change in costs by providing an increase in output by a substantial and discrete amount. Essentially, the LRIC methodology is concerned with pricing signals to customers and water efficiency. There are several variants of textbook version of LRIC including: TELRIC (Total Element), TSLRIC (Total Service) and LRAIC (Average). For the Referred Work, the Authority has used the "textbook" LRIC.

8.2 Textbook LRIC is defined as the annuitised capex and opex over the increment in demand:

$$LRIC = \frac{\left(\alpha I_j + O_j\right)}{\left(Q_{j+1} - Q_j\right)}$$

8.3 Where j refers to the year in which the next major investment is completed.[36] The capex/investment I is multiplied by a capital annualisation factor α.[37]

8.4 The LRIC estimate will jump from investment peak to investment peak with price changing immediately following an investment to reflect the incremental costs of the next capacity investment that will have to be incurred. LRIC will therefore be constant until a new investment takes place where it will be adjusted to reflect the next new anticipated investment. The Authority recognises that the LRIC methodology emphasises the need to give investment signals and provide price stability, but at the possible expense of some loss in short run allocative efficiency. Capital costs (e.g. for incremental water treatment) will be higher than under either of the two accounting methodologies as the capital value discount is not applicable in the LRIC methodology.

8.5 The Authority has investigated the impact of the scale of the increment (based on the water delivered by the Ashgrove system in 2000-01). The Authority has focused on 20-50% as a reasonable size of the increment (i.e. large enough to stimulate expansion investment but not so large that it necessitates large-scale infrastructure duplication).

8.6 The LRIC model estimates the LRIC for both a “new build” and an “expansion” of the existing system. The least cost option (new build or expansion) depends on the scale of the increment, with smaller

[36] As defined above LRIC does not extend beyond the next investment. However, it could be redefined to look at the average of the next of several investments.

[37] The annualisation factor depends on the choice of annualisation methodology. For instance, it could be the case that straight line depreciation, annuities or tilted annuities is chosen.

increments favouring expansion. For each generic option (new build or expansion), the LRIC model calculates the associated access price.

8.7 The LRIC model is centred on a simplified engineering model that is based on a set of simple energy (hydraulic) and mass (water/solids) balances. The associated capital and operating costs of any given sized system are modelled from first principles.

8.8 A number of cross-checks have been applied to ensure cost model accuracy. Unit capital costs have been cross-checked with: i) known investments on the Ashgrove system: automation (1990/1991), sludge improvements (2002) and main replacement (1995), and ii) an independent capital cost report on the Ashgrove system from independent cost engineers. Unit operating costs have been cross-checked with: i) accounting information from the Ashgrove cost centre, and ii) standard engineering operating cost factors.

8.9 The key LRIC model inputs are: the (opportunity) cost of capital (%), the capital cost inflators for site specific factors, the capital cost adjustment for expansion rather than new build (e.g. incremental water treatment costs are reduced as a result of existing support infrastructure), the volume increment (%), the average volume delivered at current maximum capacity (m^3/yr), and the daily customer peaking factor. Other important inputs include the nature of the water storage provided (residence time and tank construction), the pipe roughness (of a new and the existing steel pipe), the leakage level (of a new and the existing steel pipe) and the sludge flow estimate.

8.10 In the LRIC model, the non-potable supply system is split into 8 functional activities: operational control (including metering and telemetry), raw water aqueducts, water pumping, water treatment, sludge management, water storage, water distribution, and business management.

8.11 Capital and operating costs are estimated for each functional activity. Section I below sets out the costs, Section II below sets out the two LRIC model options, namely "new build" and "expansion", in more detail, and Section III discusses the scale of the increment.

I. The Costs

(1) Capital Costs

8.12 Capital costs for each functional activity are estimated by applying standard costs from the appropriate cost base (in this case 1997/98) (the closest cost base data to 2000/01). The standard costs used in the LRIC model are either those provided by Dŵr

Cymru (in 1997/98) or industry benchmarks/averages. To develop robust capital cost estimates (which can then be equated to the MEAV for each functional activity each standard cost must be adjusted for:

- asset scale (by appropriate exponential cost models);
- asset scope (by appropriate cost relationships to account for any difference with standard cost project definitions e.g. non-potable storage vessels are potentially different to service reservoirs); and
- site complexity (by site specific inflators).

8.13 The standard costs and the adjustments made have been checked by referencing the pre-tender capital cost estimate of the Ashgrove system by external cost engineering consultants. In the LRIC model, the estimated capital costs have then been annualised using the opportunity cost of capital.

Asset Scale - Exponential Cost Models

8.14 Within the LRIC model, the capital cost models are different for non-infrastructure and infrastructure components. For **non-infrastructure elements** (i.e. water pumping, water treatment, sludge management, water storage) the following exponential cost formula has been used:

$$Cni = A * Bni * Eni * \{[Vni/Vs]^Z * Cs\}$$

8.15 Where Cni is the capital cost of non-infrastructure asset to meet the increment (£); A is the COPI inflator from standard cost base year (%); Bni is the site specific inflator for non infrastructure assets (%); Cs is the capital cost of non infrastructure in the standard cost base (£); Eni is the cost factor to allow for items missing from the standard cost (e.g. piping, electrical, control, civils, buildings); Vs is the capacity measure of the standard cost (e.g. water storage capacity (Ml), water treatment/pumping capacity (Ml/d), pumping head (m)); Vni is the capacity increment selected or calculated (e.g. storage capacity (Ml), treatment/pumping capacity (Ml/d), pumping head (m)) and Z is the scale exponent ratio.

8.16 For **infrastructure elements** (i.e. raw water aqueducts, non-potable mains, sludge mains) the diameter (D) of the pipe is first calculated. Knowing the maximum head loss of the various distribution elements (from the height above datum of the main non-infrastructure elements) this is done via the Swamee-Jain approximation to the Colebrook-White[38] equation. For example, the

[38] The DoE/NWC Standing Technical Committee on Sewers and Water Mains recommends the use of Colebrook-White for all pipe flow calculations.

maximum head loss in the gravity main is estimated at 21.6m and is based on the difference between the height of the treatment works outlet (30.25m AOD) and the height of the storage embankment inlet (8.7m AOD). This is similar to the maximum head loss (22.4m) required to provide 4.5m of delivery head at the Shotton Paper meter connection (3.3m AOD).

8.17 The Hazen-Williams formula (friction loss coefficient assumed to be 116.6) and an alternative approximation to the Colebrook-White equation (as developed by Ibrahim Can[39] using non linear multivariable regression techniques) are used to cross-check the pipe diameter results of the Swamee-Jain approximation.

8.18 The main laying costs (and the MEAV) for the raw water aqueduct, the non-potable distribution main and the sludge main are then calculated by the following formula:

Csub-urban = R* Csuburban100mm * D ^ [alpha*D/(beta+D)]
Cgrass = (1-R)* Cgrass100mm * D ^ [alpha*D/(beta+D)]
Ci = A * Bi * [Csuburban + Cgrass] * L+Ei

8.19 Where Ci is the capital cost of the infrastructure asset to meet the increment (£); D is the estimated main diameter (mm), R is the proportion of the pipe length that is classified as suburban (%), L is the length of pipe (m), Ei is the cost factor to allow for missing items from the standard cost (e.g. river and rail crossings, landowner compensation) and C100mm is the standard main laying cost (£/m) for a 100mm pipe in rural and suburban surface types respectively. Alpha and Beta were determined manually within the LRIC model by comparing the modelled main laying cost with those obtained from the 1997/98 standard cost base. A is the COPI inflator from standard cost base year (%) and Bi is the site specific inflator for infrastructure assets (%).

Standard Costs (Asset Scope and Site Complexity)

8.20 As noted above, the capital costs associated with each functional activity have been based on standard costs (see Cs and C100mm above), with appropriate adjustments for site specific conditions (see Bni and Bi above) and missing cost items (Eni and Ei above). One of the most difficult areas in developing robust capital cost estimates was adjusting the standard cost to reflect outturn prices. This issue was considered for each of the main capital cost items associated with the Ashgrove system: five non-infrastructure (operational control, water treatment, sludge management, water storage, water pumping (required under the expansion option)), and two infrastructure (main laying and main relining).

[39] Simplified equations calculate head loss in commercial pipes, Ibrahim Can, *Journal of American Science*, 1(1), 2005.

Non-Infrastructure Standard Costs

8.21 The general standard cost specification for infrastructure assets seeks to exclude any components of cost relating to site specific factors. For example, in developing standard costs it is assumed that there are: no planning constraints, no restrictions on working hours, no unusual ground conditions, no land purchase costs, no access problems, standard designs are applicable, no extra commissioning costs etc. In the LRIC model, these exclusions are managed by applying site specific inflators (Bni). In addition, for each standard costs there are specific cost exclusions that need to be considered. In the LRIC model these exclusions are managed by applying appropriate engineering cost factors (Eni). These modifying factors are now discussed in more detail.

8.22 **Operational Control**: Telemetry and automation included in standard costs is limited to local control and provision of suitable signals only, for subsequent capture by an assumed existing regional telemetry system. Regional telemetry and control systems are therefore excluded from standard costs. Hence since telemetry systems have been installed for both water treatment and water storage this cost item has been included in the "new build" capital cost estimate. However, for the “expansion” option these telemetry costs have been ignored as it has been assumed that the existing telemetry systems will suffice.

8.23 Between 1989 and 1991, the Ashgrove system was fully automated. In 1989/1990, a refurbishment of the Ashgrove WTW took place. As part of this refurbishment, the process valves and pumps at the Ashgrove WTW were automated and a telemetry system was installed. In 1990/91, the Sealand automation scheme took place. This scheme automated the valves, replaced the flow meters and provided monitoring of the levels on the Corus lagoons. This was supplemented by the provision of a telemetry system at Sealand and at the Corus lagoons, which allowed remote control and monitoring via the control room at Dŵr Cymru’s Bretton WTW. Expenditure on the Ashgrove WTW refurbishment was around £329,000[40] (1989/90 prices), whereas expenditure on the Sealand automation was around £242,000[41] (1990/91 prices). However, only part of this combined automation expenditure of around £571,000 (or £674,000 in 2000-01 prices) can be considered as indicative of the capital cost of the regional telemetry system.

8.24 Dŵr Cymru has commented on the capital cost of these regional telemetry assets (outstations, programmable logic controllers) and

[40] Letter from Dŵr Cymru to the Authority dated 9 March 2007, response to Q5.
[41] Letter from Dŵr Cymru to the Authority dated 4 April 2007, response to Q5.

the hardware and software at Bretton WTW itself. It has stated that "*based on the knowledge and recent experience of local managers, our indicative MEAV estimate is £335,000 in current prices*" (letter from Dŵr Cymru dated 13 April, response to Q1h). This is around 50% of the combined actual automation expenditure of £674,000 identified above.

8.25 In the LRIC model, the telemetry cost has been estimated by applying a telemetry cost factor to the water treatment and water storage capital cost estimate. For items over £300,000 the telemetry cost factor[42] tends to range from 5-15%, depending on the actual cost of the item. To reflect these scale effects, the lowest telemetry/control factor of 5% has been applied for water treatment with the mid-point of 10% being applied for water storage. A separate cost estimate has been made for the computer control equipment at the Bretton WTW. These cost factors (when applied at 100% increment for the "new build") are broadly confirmed by: i) the indicative telemetry/control capital cost estimate of £335,000 that has been provided by Dŵr Cymru; and ii) the independent cost estimate provided by the cost engineers.

8.26 **Water Treatment:** The standard cost for water treatment is based on the construction of a new treatment works (type SW2), lowland source, with treated water output of 30Ml/d. It is based on simple physico/chemical treatment with no pumping or screening but includes buildings (admin/control, filters, chemical storage and dosing), electrical and instrumentation. The scale exponent ratio is assumed to be 0.69.

8.27 The standard cost also includes chlorination facilities, a contact tank (30 minutes) and filtration and these costs are removed from the standard water treatment cost in the LRIC model. The cost of the filtration unit is assumed to be equivalent to the standard cost for the replacement of a filtration system at an existing WTW (which includes filter building including upper filter gallery). The costs of a small tank (30 minutes residence time) have been used to proxy the contact tank and chlorine dosing equipment costs have been estimated and excluded. These excluded costs currently amount to around 45-50% of the standard cost for water treatment. This is comparable to the proportion (35-45%) that these elements (filtration and chlorination) account for in a similar size/type of WTW (TR61, *Cost Information For Water Supply and Sewerage Disposal,* WRC, 1977).

8.28 The standard cost for water treatment excludes standby generators and associated switchgear, roads, fencing and landscaping. Some of these excluded costs have been incurred at the Ashgrove WTW: improved security lighting (1990), standby generator (1991), road

42 Table 4.5 Installation sub-factors for main plant items, *Guide to Capital Cost Estimating,* AM Gerrard, Institution of Chemical Engineers, 2000

resurfacing (1991), and security fencing (1991). Dŵr Cymru has stated that "*direct cost information on the remaining seven, comparatively minor items, is not available, but it is considered likely that they would be in the range of £5,000-£20,000 each*." (letter dated 9 March 2007, response to Q5). The Authority believes that not all of these seven cost items are "comparatively minor". The cost engineers have estimated over £550,000 for support infrastructure costs (including roads and fencing) and around £100,000 for the stand-by generator.

8.29 The engineers' capital cost estimate for water treatment can be split into two elements: the treatment works infrastructure (£22K per Ml/d) and the treatment works itself (£96K per Ml/d). The engineers cost estimate of £96K per Ml/d for the treatment works itself corresponds to the unit standard cost for partial water treatment. However, it is evident that associated infrastructure costs will add a further 20% to the standard unit cost. These missing infrastructure costs are therefore accounted for by a site specific inflator of 20%.

8.30 **Sludge Management**: The standard cost for water treatment also assumes that no sludge storage or sludge treatment facilities are required. It is assumed that sludges from all process units are disposed of to sewer which is conveniently situated within the site. However, some preliminary sludge processing is undertaken at Ashgrove WTW before it is transported off site via a dedicated sludge main, "[*T]he sludge flows under gravity to two sludge thickeners. The sludge is allowed to settle, the supernatant water is decanted off and pumped back up to the head of the works. The sludge is then transported via a pumping main to a connection with a public sewer*" (letter from Dŵr Cymru to the Authority dated 5 March 2007, response to Q1d).

8.31 In 2002, expenditure on a number of sludge disposal improvements had to be made to the Ashgrove system. Works were undertaken to improve the sludge disposal at the Ashgrove WTW (e.g. pumping the sludge to Chester STW, refurbishing the sludge thickeners, replacing sludge valves) and modify the digestion facility at the Chester STW (to accommodate the additional sludge load). The capital expenditure was estimated to be around £348,000[43] (target cost basis).

8.32 Sludge management costs are clearly important – the capital cost of sludge processing might be more than half the capital cost of sedimentation (TR61) and there will be additional operating costs for final sludge disposal. The balance between sludge capital and operating costs will depend on the sludge disposal route selected.

[43] Letter from Dŵr Cymru to the Authority dated 9 March 2007, response to Q5.

8.33 To date (with the exception of the sludge main) sludge management costs have been largely ignored by all the parties. All parties are now agreed on the need to include sludge management costs. Albion clearly summarises the consensus stating "*any forward looking price would anticipate the cessation of the discharge (of the sludge) direct to river*" (letter dated 8 May 2007). As part of the Referred Work, sludge management costs need to be fully attributed to the Ashgrove system. A separate capital/operating cost estimate for sludge management (for initial processing, subsequent transportation via the sludge main and ultimate sewer disposal) is therefore provided in the LRIC/LAC model. The engineers capital cost estimate for sludge thickening/pumping was around £13K per Ml/d in 2000/01.

8.34 **Water Storage:** The "new build" water storage option provides an indication of the economic value of the Corus lagoons and the robustness of the amount paid by Dŵr Cymru for the use of the lagoons in 2000-01. The capital cost for water storage is based on the construction of a fully lined lagoon[44] (typically around 50-60% of the capital cost of an equivalent sized service reservoir – see the AAC-plus methodology for a more detailed discussion of this point). This lagoon cost model is developed from the standard cost of a new service reservoir of capacity 15Ml. The capacity of the service reservoir is 15 Ml from top water level to floor, with the top water level being 5m above the floor. The reservoir is a conventional half in the ground and half out semi-buried structure. The scale exponent ratios of different storage vessels appear to be relatively similar. With the exception of small rectangular concrete tanks these are broadly comparable to the scale exponent of service reservoirs (0.64).

8.35 For the expansion option (noting the existing scale of the Corus lagoons) in the Draft Assessment, the Authority assumed that the existing lagoons would suffice until total demand exceeds 45 Ml/d. At this point the capacity of the existing lagoons may need to be expanded. In the LRIC model, to cost this delayed expansion it is assumed that the new hypothetical lagoons will provide 24 hours worth of storage. This is based on the existing functional capacity of the Corus lagoons, "[*T]he theoretical capacity of the Corus lagoons for flow balancing is 18 Ml (9 Ml each). In practice, however, the actual capacity is believed to be over 20 Ml because of the inherent lags between fluctuations in lagoons levels and control responses. The gross capacity of the lagoons is estimated to be 68 Ml (34 Ml each)*" (letter from Dŵr Cymru to the Authority dated 5 March 2007, response to Q1a). A storage volume of 18ML is equivalent to a vessel residence time of around 24 hours.

[44] Dŵr Cymru has stated that "*from our own visual recollection, we believe that the Corus lagoons are lined, but we have not verified this*" (letter from Dŵr Cymru to the Authority dated 4 April 2007). Albion has confirmed that the Corus lagoons are bitumen lined.

8.36 In the context of the Ashgrove system, Dŵr Cymru has also stated that "*unlike the majority of other large potable and non-potable customers they [Shotton Paper] do not have significant on-site storage that could act as the buffer between their processes and the water supply system*" (letter dated 4 April 2007). Albion has subsequently stated that Shotton Paper is not that unusual and it has around 10 Ml of storage on-site. Dŵr Cymru has countered that *"this is still small by comparison with other large industrial customers*" (letter dated 23 May 2007).

8.37 Dŵr Cymru has also argued that "*given the function that the lagoons perform, they are, strictly speaking, already too small in the sense that they do not provide as much protection to the Ashgrove treatment process from the fluctuations in Shotton Paper's demand as would be ideal. On a "like-for-like" basis, therefore, the safer assumption is that additional storage would strictly be required for any increment*" (letter dated 25 May 2007). In contrast, Albion "*observe that the addition of further fixed speed pumps to the system would increase the flexibility to match supply to demand and reduce the volume of "overflow" needed. Obviously were one or more of these pumps to be variable speed, the requirement for an "overflow" could be very substantially, if not wholly, avoided*" (letter dated 30 May 2007).

8.38 Without further engineering investigation beyond that already undertaken, the arguments are difficult to judge. On reflection (assuming the demand profile remains unchanged and noting the presence of the pumps under the expansion) the Authority confirms its decision in the Draft Assessment to exclude incremental water storage (i.e. flow balancing) costs from the LRIC "expansion" option (until demand reaches 45 Ml/d, i.e. an increment of almost 100%). In addition, it appears that the onsite storage at Shotton is substantial enough to negate the need for top-up supplies at smaller demand increments.

8.39 **Water Pumping**: Water pumping is only required under the LRIC "expansion" option. The standard cost for water pumping is based on the installation of a new fixed speed pumpset (of 10 Ml/d and 75 m head), complete with motor and baseplate, to be installed in an allocated position at an existing high lift pumping station. The standard cost includes cabling, ICA equipment installation and connecting pipework, but excludes switchgear, standard generation, starters, incomer and transformers. For the standard cost, it is assumed that there is no change required to any of the following, which are retained: existing pipework, lifting equipment, or the pump house building. In the LRIC model, some of these excluded costs are managed by applying an electrical/piping cost factor[45] (50%, 25% for *"average bore piping predominantly liquid*

[45] Table 4.5 Installation sub-factors for main plant items, *Guide to Capital Cost Estimating*, AM Gerrard, Institution of Chemical Engineers (IChE), 2000.

pumping" and 25% for *"transformers and switchgear for machine drives such as pumps"*) to the pump cost estimate. Other excluded costs are reflected in the pump house cost estimate (which is cross-checked by applying an IChE civil/building cost factor of 50%, 29% for *"plant in a simple covered building"*, 21% for *"above average civil work"*).

8.40 Using TR61 (*Cost Information For Water Supply and Sewerage Disposal*, WRC, 1977) information (which is based on a sample of 45 pumps ranging from 13 to 181 metres of normal operating head), the capital cost of a pump is a function of two factors: the average/peak capacity and the average/peak pumping head. The scale exponent for pump capacity was 0.81 whereas the scale exponent for pump head was 0.43. This highlights the relative importance of incremental capacity over incremental head in determining pump capital costs.

8.41 The engineers' cost estimate for pumping was around £10K per Ml/d. This is below the adjusted standard unit cost and a site specific inflator of 30% has been applied in the LRIC model. Pumping station infrastructure costs (e.g. power connections, road access etc) have been excluded.

Infrastructure Standard Costs

8.42 The standard infrastructure cost estimates produced by companies are based on whole project costs of completed projects. Standard infrastructure costs are required for laying new water mains and the rehabilitation of water mains for specified pipe diameters (100mm, 150mm, 300mm, 450mm and 600mm). For main laying standard costs, three surface types are specified: grassland, rural-suburban highway and urban highway. For main rehabilitation, standard costs, four techniques are specified: surface applied internal coating, sliplining, pipe bursting and pipe insertion (although for pipes above 300mm only pipe insertion standard costs are requested by the Authority in a regulatory context).

8.43 Standard infrastructure costs require unit costs for construction, which are typical of situations where adverse conditions and complications are minimal. The Authority therefore asks companies to assume that quite simple main installation conditions exist[46]. In developing standard infrastructure costs, the Authority asks companies to assume: no unusual ground conditions (e.g. no unusual ground/water-table or land drainage conditions), no contaminated soil, no lane rental costs, no underground obstructions, no compensation, no access problems (requiring limited working hours), no disconnection/reconnection of services, and to assume that a landfill is close by. In essence these external

[46] *Section C2: Cost Base*, *Benchmarking and Efficiency Studies*, *PR04 Business Plan Information Requirements*, *Volume 2*, 2004.

"locational" factors (which are beyond the control of the company) are constrained for the purpose of developing company standard infrastructure costs.

8.44 **Main Laying:** The actual cost of laying any given main (potable or non-potable) will also be influenced by other "engineering" factors. These engineering factors include: pipe (laying) depth, pipe pressure rating, pipe material, diversity of pipe diameters, the exact nature of reinstatement, and the corrosion protection provided. In the standard costs for main laying, the pipe pressure/depth is restricted to 10 bar and 900mm respectively, while the level of reinstatement (type 2, 3 or 4) is specified for each surface type. Changes in these other "engineering" factors can increase main installation costs (from the simple situation to the complex) by more than 400% (see TR61 for the impact of "over-under" factors on main installation).

8.45 For the Referred Work, the Authority's current view is that four factors will be critical to the scale of the capital cost estimate of the various Ashgrove mains (raw water aqueduct, non-potable distribution main, sludge main). These are: i) the pipe diameter (mm), ii) the surface type (grassland, rural-suburban highway, urban highway - that will influence the level of reinstatement, clearance and site access), iii) the urban/rural vicinity of site (that will also influence site access and determine possible restrictions on site operations), and iv) the number of major river/rail crossings.

8.46 The Authority has suggested the desk-top (computer based) Ordnance Survey (OS) allocation of non-potable mains of different diameters to surface type is *"fit for purpose"*. The Authority has suggested that these OS definitions of *"rural"* and *"urban*[47]*"* areas can be broadly correlated to the company's standard costs for *"grassland"* and *"rural/suburban highway"* (unless it is clear that the trunk main is located under a trunk road or travels through a town/city centre, in which case the company's "urban highway" standard cost is appropriate). In addition, the Authority considered it should be possible to identify (from the desk-top inspection of OS maps) the number and type of major river/rail crossings and provide a suitable capital cost uplift. However, Dŵr Cymru has already provided a manual survey of the Ashgrove mains (see second witness statement from Christopher Alun Jones) and this analysis (but only split between rural and suburban) has been used in the LRIC model.

8.47 The Authority has used cost information about the "A550 project" to inform the level of the site specific factor for main laying. In 1995 around 1,000 metres of the Ashgrove main (alongside/under the A550 road) was replaced. Dŵr Cymru has subsequently estimated that "*the A550 project cost £514,000*" (letter from Dŵr Cymru to the

[47] Where urban is defined by the OS as *"an area containing a concentration of buildings and other structures"*.

Authority dated 4 April 2007, response to Q5) and commented that "*the terrain was overwhelmingly rural, although the new main does cross the A550 itself*" (letter dated 7 June 2007). This project cost equates to around £615 per metre in 2000/01 prices.

8.48 The cost engineers have estimated that the unit (700mm diameter) pipe laying cost for the raw water aqueduct and the non-potable distribution main were £651 per metre and £658 per metre respectively in 2000/01. These unit costs are comparable to both the A550 project unit cost of £615 per metre and the unit MEAV cost (for 620-720mm) of £677 per metre that was used by Dŵr Cymru to develop its company MEAV estimate in 1997/98. These unit costs (of around £650 per metre) would support a site specific inflator of 20% for large diameter main laying between Heronbridge and Shotton.

8.49 The level of soil contamination may also be an important engineering factor at some industrial sites. The Tribunal has noted "*there are the complications of a major river crossing and a railway crossing. In the immediate vicinity of Shotton Paper and Corus there is contaminated land containing tars and phenols from old coking works*" (paragraph 138 of the Further Judgment). A number of non-potable customers could also have similar river/rail crossing and land contamination problems. Indeed, Dŵr Cymru has "*noted that there are at least ten rail crossings and over twenty river crossings on the non-potable supply systems*" (letter from Dŵr Cymru to the Authority dated 26 March 2007, response to Q6). The contaminated land issue has been managed by the site specific inflator (identified above) whilst the crossings issue has been catered for by assuming an incremental cost of £1,000 per metre for rail/river crossings.

8.50 As pointed out by Dŵr Cymru on day 1 of the hearing Dr Bryan stated "*as you approach Shotton you have even bigger complications because the sites through which you would have to pass were formally coking works associated with the old steel mills…..You cannot put a plastic pipe through that sort of terrain because certain plastics – phenyls in particular – will go through plastic pipes*" (letter dated 11 May). However, it is the Authority's understanding that Albion now believe that a plastic pipe is viable stating "*Why has the expensive ductile iron option been chosen, instead of plastic?...Plastic would be the first choice here*" (letter dated 13 June 2007).

8.51 The cost engineers have explained that plastic pipes (at the large diameter sizes required to supply Shotton Paper and Corus Shotton) are not commonly available. If they are available it appears to be only through an expensive special order. For example, Wavin (a well known pipe supplier) offers a 630mm plastic pipe by special order - with a start price of over £300 per m for just the plastic pipe itself. On the basis that ground conditions

may be difficult and that plastic pipes at/over 650mm (the minimum diameter required to supply the Shotton site under gravity) may not actually be available (at reasonable prices) the Authority has assumed that metal (and not plastic) pipes are appropriate for the LRIC/LAC modelling work.

8.52 **Main Rehabilitation:** The standard cost for main rehabilitation is extrapolated from the standard cost of pipe insertion for a 600mm pipe.

Non Infrastructure and Infrastructure Asset Lives

8.53 For non-infrastructure, asset lives have been taken from Table B32 of the business plan submission for PR04. For infrastructure asset lives have been estimated at 120 years (for the various mains) and 100 years (for the pipe insertion). This physical asset life is supported by the historic level of infrastructure renewals expenditure on distribution mains (trunk and local) across the industry (~0.7% of MEAV per annum).

Local Building and Accommodation Costs

8.54 There are three buildings that are wholly or partly attributable to the Ashgrove system: the control room at the Bretton WTW, the building at the Ashgrove WTW, and a possible pump house (under the LRIC expansion scenario).

8.55 The cost of the Bretton WTW has been estimated by using a local rent and required area for operational control. Dŵr Cymru has stated that "[*L]ocal office rental costs in 2000/01 are believed to have been in the region of £50 per m² per annum on a rent-only basis (i.e. excluding rates, services, utilities)*" (letter from Dŵr Cymru to the Authority dated 5 March 2007, response to Q2a) and "[*O]n the basis of the existing control arrangements […] we estimate that approximately 12 m² of office space would be required for the control equipment, records storage and so forth, plus, say, an additional 8m² for ancillary accommodation (toilets, kitchen, etc) but excluding parking space for vehicles"* (letter from Dŵr Cymru to the Authority dated 5 March 2007, response to Q1h). Adding 25% for rates, services and utilities, the equivalent control office costs associated with system control were considered by the Authority to be around £16,000 p.a. As for telemetry costs, under the LRIC "expansion" option these control room costs have been excluded as the Authority has assumed that the existing control room will suffice under smaller increments (where the existing Ashgrove system has been expanded to manage the demand increment).

8.56 The cost of the buildings at the Ashgrove WTW is included in the standard cost for water treatment. This cost may account for up to 25% of the standard cost (see TR61). For the LRIC expansion

option (installation of additional clarifiers), the Ashgrove WTW building cost is excluded (as the Authority has no grounds to believe that the existing accommodation facilities are not sufficient under all reasonable increments).

8.57 Under two of the "expansion" options, a new pump house at Ashgrove WTW is required. The cost of the pump house has been estimated using construction cost information from Spons (£/m²) and an estimate of the area required per installed pump. This cost estimate has been cross-checked by adapting the pump house cost model from TR61 and by applying civil/building cost factors (see *IChE Guide to Capital Cost Estimating*) to the estimated capital cost of the pumps.

(2) Operating Costs

8.58 Operating costs for each functional activity are split into five categories: direct operations, direct supervision & support (including payroll costs), repairs & maintenance, insurance & rates and purchases (power, chemicals and trade effluent/flow balancing functions).

a. **Direct operational costs** are determined by assuming reasonable salary and staffing levels in 2000/01. For the majority of the functional activities (raw water aqueducts, distribution, storage and pumping) direct operations have been assumed to be nominal – either at £1,500 per annum for all infrastructure assets (£24,000 salary, 2 persons, 1.25 weeks per year) or £6,000 per annum for non-infrastructure assets (£24,000 salary, 2 persons, 5 weeks per year) such as the pumps required under the "expansion" option. Generally these direct operational costs are small and in the LRIC model assumed to be fixed for the "new build" option (and do not therefore change with the scale of the increment). Furthermore, under the "expansion" option these nominal infrastructure operating costs are excluded. The critical manpower requirements are for system control and water treatment management (noting that no operational cost is attributed to sludge management as it is assumed to be included here) where the staffing levels are assumed to change with the scale of the increment (see below). Accounting evidence is available for direct operational costs at the WTW for 2000-01 but records for pipeline inspection activities[48] are only available for 2004/05. Dŵr Cymru has referenced "*Jones 2, Annex 5, para 7, which provides details of the manpower needed to operate the Ashgrove works, and gives an estimated cost in 2000/01 of £31,512. This excludes management and supervision*" (letter from Dŵr Cymru to the Authority dated 5 March, response to Q2f). Dŵr Cymru has also stated that in 2004/05 *"there was one*

[48] These inspection records have been disputed by Albion (see letter dated 19 April). Albion claims that the inspection would only take a maximum of 2 days, and not 6 days as claimed by Dŵr Cymru. These manpower costs are immaterial to the LRIC/LAC model results. The Authority has not therefore pursued this line of enquiry.

full inspection of the main…[I]t is estimated that it will have taken a team of two approximately six days….The salary rates for the inspectors in 2000/01 were in the region of £20-24,000 per annum" (letter from Dŵr Cymru to the Authority dated 5 March, response to Q2e).

b. **Direct supervision & support costs** are estimated as a simple multiple of direct operations costs (50% in total: 30% for payroll overheads and 20% for direct supervision costs). Other support and general expenditure costs are excluded from the LRIC model.

c. **Repairs & maintenance and (incremental) insurance & rates** are both driven by the associated capital cost estimates. Both items are estimated as a percentage of capital costs, with repairs and maintenance varying from: 0.05% for the various mains, 0.1% for the civil components (e.g. pump house etc), 0.5% for more technical components (of water treatment/sludge management and water storage), 3% for pumps and 5% for automation/control equipment. Records of all the reactive maintenance tasks (as coded to the Ashgrove WTW) between 2002 and 2005 are available as a cross-check to the treatment repairs & maintenance assumption. The average reactive maintenance costs for the Ashgrove WTW from 2002/03 to 2005/06 was around £18,000 per annum (see Annex LC7, attached to letter from Dŵr Cymru to the Authority dated 5 March, response to Q4). This equates to around 0.5% of the capital cost, which is typical for a water treatment facility of this type[49]. High level water industry wide estimates of annual (planned and reactive) repairs & maintenance expenditure on infrastructure and non-infrastructure assets are available from the regulatory accounts. These estimates (when normalised by the appropriate MEAV estimate) have been used as the ceiling for the repairs & maintenance cost factors that have been applied. For example, for water distribution the industry (reactive and planned) repair and maintenance cost factor is around 0.4% whereas for water treatment it is around 0.6%. As noted above, in other more intensive process industries these repairs & maintenance costs generally range from 2-12% of the associated capital costs. Incremental insurance is taken at 0.2% of the associated capital cost and incremental rates are taken as a proportion of the incremental profit, charged at 41.2p per pound.

d. **Purchase costs** (e.g. power, materials and external services) are specific to each functional activity and in the LRIC model they are assumed to be variable (and to change with the scale of the increment). They are important operational cost items and include: for water pumping, the power costs (variable, only relevant to the LRIC expansion scenario); for water treatment,

[49] *US EPA Report on estimating water treatment costs*, 1979.

the alum chemical costs (~0.5p/m³); for sludge management, the sewer disposal costs (~1.0p/m³) and for water storage, the costs of the use of the lagoons (~1.3p/m³).

8.59 Direct operational and purchase costs are particularly important and are therefore now discussed in more detail.

Direct Operational Costs

8.60 **System Control:** Christopher Alun Jones (in his second witness statement) has stated that "*Bretton managers have estimated that the management of the Ashgrove system would account for 12% of the workload for each of the 3 inspectors, and 5% of the workload for each of the 5 controllers*". In 2000-01, the direct operational staff costs were estimated at around £15,756 pa (see second witness statement of Christopher Alun Jones, paragraph 7, Annex 5). The inferred direct system operational cost was around 0.2p/m³ in 2000-01.

8.61 Under common carriage, Dŵr Cymru has recently (letter from Dŵr Cymru to the Authority dated 26 March 2007, response to Q12) suggested that "*the control of the Ashgrove system by the network operator would become more complicated*" and that the workload of the controllers may increase to "*10% under the common carriage arrangements*" adding *"£16,800 to annual staff costs*". In addition, Dŵr Cymru has noted that it is also required to provide "*24 hour standby system control to manage significant unforeseen changes in demand*" (letter from Dŵr Cymru to the Authority dated 26 March 2007, response to Q13). This would double the inferred direct system operational costs to around 0.4 p/m³. These additional costs have not been included under system control in the LRIC model as they have been considered under common carriage service costs.

8.62 **Water Treatment:** Where cost centre data is available (e.g. Ashgrove WTW cost centre) from Dŵr Cymru the modelled operating costs have been cross-referenced with actual local (accounting) cost information. Dŵr Cymru has stated that "[*M]anagement accounts extracts for 2000/01 show that direct site costs were £33,102*" (see also second witness statement of Christopher Alun Jones, paragraph 1, Annex 5). This excludes management and supervision. Dŵr Cymru has also stated that "[*T]he reactive maintenance tasks […] are not charged to the [+] Ashgrove cost centre….Note that planned maintenance does not fall within this category*" (letter from Dŵr Cymru to the Authority dated 5 March, response to Q4).The inferred water treatment direct operational costs (for staffing) was around 0.4p/m³ in 2000-01.

Purchase Costs

8.63 The purchase costs are particularly important to the LRIC model results. They have been estimated by direct calculation:

- For pumping power, from knowledge of the required pumping head, pump efficiency (%) and local electricity costs (p/KWhr).

- For the costs of the use of the lagoons, from the price differential between Corus Shotton and Shotton Paper in 2000-01 and the volumes delivered to Shotton Paper in this same year.

- For alum chemicals, from an understanding of the chemical dosage (mg/l) and the chemical cost (£/tonne).

- For sludge disposal, from an estimate of sludge flows (as % of the demand increment) and the associated trade effluent disposal charge (p/m³, as determined by estimated sludge suspended solid and COD concentrations).

8.64 **Pumping Power:** Dŵr Cymru has stated that "[*T]he electricity tariffs applicable to the Ashgrove site in 2000/01 were 4.16 p/kwh during the day and 1.99 p/kwr between midnight and 7am*" (letter from Dŵr Cymru to the Authority dated 5 March 2007, response to Q2b). This equates, on average, to 3.5p/KWhr. The pump efficiency is assumed to be 64% (see TR61). The power cost will be a function of the increment and the associated head loss. This cost item is only used for the expansion option.

8.65 **Lagoon "Rental" Costs**: Dŵr Cymru has stated that "[*w]e do consider that the full cost of using the lagoons should be attributed to Shotton Paper because of two unusual demand characteristics. First, because of the nature of their processes, their volumetric demand can drop dramatically at any time. Second, unlike the majority of other large potable and non-potable customers they do not have significant on-site storage that could act as the buffer between their processes and the water supply system*" (letter from Dŵr Cymru to the Authority dated 4 April, response to Q2d). The equivalent usage cost in 2000-01 was £86,246 (see second witness statement from Christopher Alun Jones). Dividing by the average volume delivered to Shotton in 2000-01 yields a lagoon usage cost of 1.3p/m³ in 2000-01. This is less than the incremental cost of Dŵr Cymru providing its own lagoon flow balancing facility (LRIC model calculation). This cost item is only used for the "new build" option.

8.66 **Chemical Costs:** Dŵr Cymru has stated that "[*T]he delivered price for the first eight months of 2000/01 was £47 per tonne […]. The price for the last four months was £65.50 per tonne*" (letter from

Dŵr Cymru to the Authority dated 5 March 2007, response to Q2c). "*The average dosage on a "delivered product" basis is 88ppm* (letter from Dŵr Cymru to the Authority dated 5 April 2007, response to Q1f). Management accounts extracts for 2000/01 show chemical costs of £43,096. This accounting cost supports the unit chemical cost (53 £/tonne) and the average dosage rate (88 mg/l) provided by Dŵr Cymru. Based on these assumptions the equivalent chemical cost would have been around 0.5p/m³ in 2000-01.

8.67 **Sludge Disposal Costs:** Sludge disposal costs are important operational costs and are largely determined by the flow and suspended solids concentration of the thickened sludge. The thickened sludge at Ashgrove WTW has a spot measured suspended solids concentration of around 4,430 mg/l (sample taken on 7 June 2007) (letter from Dŵr Cymru to the Authority dated 13 June 2007, second response to Q1g). It should be noted that the spot suspended solids concentration is subject to both fluctuating sludge flows and changing conditions in the River Dee. This particular spot measured suspended solids concentration is only relevant to a sludge flow assumption of around 1% of WTW throughput. At a lower sludge flow, the spot measured solids concentration would increase (approximately double, i.e. possibly to almost 9,000 mg/l (i.e. 0.9%), for a 0.5% sludge flow assumption).

8.68 In the Draft Assessment, the Authority had assumed that the average sludge flow would be around 1% of the average abstracted volume, similar to the percentage in 2005-06 (see also initial Dŵr Cymru response to Q1g). Based on a pre-existing 2000-01 EA discharge consent Albion has argued that "*what we know for certain is that the volume, at the relevant time was limited to a maximum of 140 m3/d and that volume, in the context of a putative trade effluent charge, is a major cost driver. There is absolutely no contemporaneous evidence or justification for assuming a higher volume than this maximum*". This maximum sludge discharge volume of 140m³/d would have been equivalent to around 0.5% of the Ashgrove WTW throughput in 2000/01.

8.69 For the Final Report, the Authority has assumed that the equivalent average suspended solids concentration in 2000/01 (based on 0.5% sludge flow) would have been around 5,000 mg/l. In 2000/01 the equivalent trade effluent charge would have been around 180p/m³. Based on these assumptions the equivalent sludge disposal cost would have been around 1.0 p/m³ in 2000-01.

8.70 This estimate of sludge solids flow (0.5% of average abstracted flow and 5,000 mg/l suspended solids) has been cross-checked by estimating the theoretical solids load that would have been produced in the clarifier. These solids are made up of the

coagulant (Aluminium) hydroxide, suspended solids (from the raw water), precipitated colour, algae and possibly other metals.

8.71 Dŵr Cymru has provided information on the average quality of the River Dee (colour 26.7 Hazen and turbidity 10.3 NTU) and the average dose as Aluminium (3.0 mg/l) (letter dated 7 June 2007). Albion has noted that not all of "*the floc is retained in the clarifier*" (letter dated 7 June 2007). In terms of floc carry over, normally around 5mg/l of the calculated dry solids will not be removed by the clarifier. Noting Albion's concerns on this point, the Authority has assumed that around 10 mg/l will not be removed by clarifier. This implies an average raw water turbidity removal of around 50 %.

8.72 Based on this information, the theoretical solids can be calculated as follows (see A.C., *Twort et al, Water Supply*, IWA, 2000): Sludge Dry Solids Produced in Clarifier of 35 mg/l (2.9*3.0 mg/l + 0.2*26.7 Hazen + 2*10.3 NTU) "minus" Sludge Dry Solids Lost from Clarifier of 10 mg/l "equals" Sludge Dry Solids for Sewer Disposal of 25 mg/l. On these assumptions, the sludge dry solids removed by the clarifier have been estimated at around 25 mg/l.

8.73 Typical sludge design parameters range between 12.5 to 25 mg/l depending on the coagulant dose and the treatment process, the higher end of this range is associated with river water. This supports the above theoretical calculation.

8.74 Assuming a sludge flow of 0.5%, this clarifier sludge concentration of 25 mg/l will equate to an estimated solids concentration for sewer disposal of around 5,000 mg/l (or 0.5%). This is not an unreasonable assumption for a thickened sludge, and indeed at this concentration (0.5%) it might be considered to be only partially thickened. This calculation is also supported by the recent spot sludge sample (4,430 mg/l) provided by Dŵr Cymru (although it is noted that the sludge flows are now higher than assumed for 2000-01, implying that the Authority's suspended solids concentration assumption is a potential under-estimate). For the purpose of the Referred Work, the Authority believes the above assumptions are reasonable working estimates.

3**) Additional Cross-Checking**

8.75 Where appropriate, the Authority has used appropriate published operating cost factors to check on the cost estimates obtained from the LRIC/LAC modelling work. All modelled operating costs are within or below the ranges from published parameters in Brennan and the EPA.

8.76 Brennan (*Process Industry Economics, Institution of Chemical Engineers*, 1998) has published a list of operating cost factors:

- payroll overheads: 30-50% of wages;

- supervision: 10-30% of direct operational costs;
- support: 50-150% of direct operational costs;
- laboratory services: 5-25% of direct operational costs;
- repairs & maintenance: 2-12% of capital costs;
- insurance: 0.1-3% of capital costs; and
- property taxes: 1-4% of capital costs.

8.77 The US Environmental Protection Agency (*Estimating Water Treatment Costs: Volume 2 – Cost Curves Applicable to 1 to 200 mgd Treatment Plants,* 1979) has published repair and maintenance cost functions for different water supply activities (clarification, water storage, water pumping).

II. The Engineering Options

8.78 The LRIC model investigates two scenarios – a "new build" scenario and an "expansion" scenario.

8.79 The LRIC model is able to investigate two alternative "new build" options:

A - Construct a parallel system that broadly mimics the existing supply arrangement.

B - Construct a parallel system where the new WTW is located at Shotton and variable speed pumps are installed at Heronbridge (possibly negating the need for the Corus Lagoons as an overflow facility).

8.80 The LRIC model indicates that the "new build" options are more cost effective at larger demand increments (>150%). For "new build", option B there is a question mark over the availability of land at Shotton and whether the various parties could agree to terms (if such an arrangement were to be deemed appropriate to provide the demand increment). In addition, in the context of the Referred Work, the LRIC methodology is focused on only those parts of the Ashgrove system for which common carriage is sought. To the extent that Dŵr Cymru does not own the Heronbridge pumps, "new build" option B has not been pursued as part of the Referred Work.

8.81 The LRIC model investigates five alternative "expansion" options. These are more cost effective at smaller increments (<150%).

8.82 **Treatment:** The LRIC model investigates two alternative *treatment* "expansion" options:

A - Extending capacity of existing basins (by plate separators) and sludge processing facilities.

B - Adding new settlement basins and sludge processing facilities to the existing works.

8.83 The engineers have commented that plate separators can be retro-fitted given the right conditions. However, whether or not they will work (or not) will depend on the hydraulic suitability of the existing clarifiers at Ashgrove WTW and the local water chemistry. Appropriate surveys would be required to guarantee success. The LRIC model indicates that option A may be cheaper at low demand increments (if selected clarifiers could have been retro-fitted), whereas option B is generally the cheapest (and most practical) option at all other increments.

8.84 **Distribution:** The LRIC model investigates three alternative *distribution* "expansion" options:

A - Installation of new pumps at the Ashgrove WTW (supplemented by the need for new pumps at Heronbridge) with continued use of the existing 700mm gravity main (assumed pipe roughness of 20mm[50]).

B - As option A, but the existing 700mm gravity main is rehabilitated via pipe insertion (reducing the main diameter and pipe roughness to 600mm and 0.0015mm[51] respectively).

C - No pumping at Ashgrove WTW. Only the existing 700mm gravity main is relined.

8.85 The cost of the pumping (capital and operating) is strongly influenced by the associated head-loss and the fact that both the existing volume and the incremental volume require pumping. The head-loss for each expansion option is estimated by the Swamee-Jaim approximation to the Colebrook-White formula (with the pipe roughness changing for each expansion option accordingly).

8.86 The LRIC model indicates that option A is generally cheaper at low demand increments (20-75%), whereas option B is generally cheaper at higher demand increments (>75%). Generally option C is not a viable engineering solution.

8.87 Dŵr Cymru has commented that "*like any main that is to be subject to an increase in pressure, a feasibility study would have to be conducted, and, in all probability, reinforcement works carried out at various points on the main including, potentially, some booster pumping*". in particular, given the timetable for the Referred Work,

[50] This has been estimated by assuming a peak daily flow through the gravity main and knowing the maximum head loss under this gravity flow.
[51] This is the roughness that is typical of a plastic pipe.

the Authority has not undertaken the proposed feasibility study but recognises that some additional unforeseen incremental investment in the non-potable distribution main may be required under option A. For illustrative purposes, the Authority has assumed that 1% of the main would have required some reinforcement.

8.88 For the LRIC model outputs, the "expansion" options are of particular importance as the demand increments have been constrained by the Authority to below 50%. The question of the appropriate increment is explained in more detail below. The results of the LRIC model for the "expansion" option for an increment of 20% are summarised in **Table 17**.

8.89 The "new build" option is important as it provides the base capital cost estimate for assessing the capital cost of water treatment and water storage (at higher increments) under the expansion option. The "new build" option also provides the means of estimating the "current value" of the various common carriage elements.

8.90 The Authority has previously stated (RAG 1.04) that "[*T]he current (cost accounting) value of tangible assets to a business means what potential competitors would find it worth paying for them in the absence of barriers to entry and exit from the business, even if competition is hypothetical. This will be the cost of an asset of equivalent productive capability to satisfy the remaining service potential of the asset being valued – a Modern Equivalent Asset (MEA)*". The MEA value is therefore defined by the Authority (RAG 1.04) as "*what it would cost to replace an old asset with a technically up-to-date new asset with the same service capability allowing for any difference both in the quality of output and in operating costs*".

8.91 The Authority has also stated previously[52] that "*the MEA values of the existing system in use, estimated on a plant by plant basis may seem an overestimate in that, starting from scratch, the system would probably be designed quite differently. However, except where there is a clear definition to redesign and rebuild the system in "optimum" configuration, the MEA values should be based on the actual system. The MEA values of individual components, where necessary, should nevertheless be based on expected capacity in use*." The MEAVs of infrastructure assets should usually be based on the replacement cost of assets delivering to modern standards.

8.92 The capital costs (estimated by the LRIC model) for the "new build" option (at an increment of 100%) can therefore be viewed as being representative of the MEAV of the Ashgrove system. These "new build" capital costs have therefore been directly exported into the LAC methodology (using an increment of 100% - which equates to

[52] Paragraph 1.9.5 of *RAG1.04: Guideline for Accounting for Current Costs and Regulatory Capital Values*, Revised February 2007.

the actual volumes delivered in the 2000-01 - as the mean of scaling the operating capacity of the system).

8.93 A similar argument can be developed for some of the direct operating costs (notably employment costs – including direct operations, payroll overheads, and direct supervision, repair & maintenance costs and the various purchase costs) estimated by the LRIC model. At an increment of 100% the aforementioned direct operating costs will be representative of the local operating costs. These operating costs have also been exported to the LAC methodology. A summary of the capital and direct operating costs (at an increment of 100%) estimated by the LRIC model is provided in Section 9 below.

III. The Increment

Water Demand

8.94 The indicative access price was offered (by Dŵr Cymru) in March 2001. It is therefore appropriate to consider how water demand was changing during and after this period, (noting that Shotton Paper planned to expand/change its paper production capacity around this time).

8.95 The demand profile of the two customers supplied by the Ashgrove system is summarised in Figure 8.2. This information is drawn from the regulatory returns from both Dŵr Cymru and Albion.

8.96 There has been a vigorous debate about the extent to which demand from Shotton Paper might have been considered to be on the rise back in 2000-01.

8.97 Following the Draft Assessment, Albion stated *"actual demand evidence, at the relevant time, showed a reducing trend and significant operational headroom. As Mr Thompson observes (page 49 lines 1-3 of the transcript), "it is not clear to us that there are any plausible scenarios in which that capital investment's actually required'"*" (letter dated 21 May 2007).

8.98 The Authority notes that demand from Shotton Paper had declined in the 2 years prior to 2000-01 and has started to decline again in 2005-06. And that over a reasonably long period total average annual water demand (from both customers) has been cyclical, but broadly stable (typically between 23-25 Ml/d).

8.99 However, demand from Shotton Paper gradually rose from 2000-01 to 2004-05, with a slight decrease in 2003-04. Demand from Shotton Paper in 2005-06 was still above 2000-01 levels. The Authority also notes that in January 2001 Albion was requesting an increase in the average volume of water to be formally supplied under common carriage – up from 18Ml/d to 22 Ml/d – and that Dŵr

Cymru were to "*consider request for increased Volume to supply at Shotton*" (see "Next Steps" in the note of the tri-partite meeting held on 16 January 2001, attached to the letter from Albion dated 12/03/2007). Whilst the final volumes to be delivered under common carriage remained to be agreed it appears that the average volume to be carried to Shotton Paper by Dŵr Cymru was likely to be formally increased from 18 Ml/d (+ 4Ml/d under the bulk supply agreement) to 22 Ml/d (under the draft common carriage agreement).

8.100 Albion has explained the apparent post 2000-01 rising demand trend at Shotton Paper as follows: "*highly significant engineering works that resulted in the move from using wood, effectively wood pulp, to produce newsprint to moving to 100 percent recycled paper. Those engineering works and the associated changes in production processes that are trying to get the system right threw out some of the efficiency gains that we made previously, it took a while for them to be embedded. But you will note that, by 2003/04 the situation is back on track and, of course, factoring in what happened with Corus, the trend is lower*." The formal request for 22 Ml/d was explained by Albion's need "*to use that system as efficiently and as flexibly as possible*" (see transcript of tri-partite meeting held on 18 May 2007 page 50 lines 7-18 and page 52 lines 4-5).

8.101 On this evidence, the Authority believes that 2000-01 was the time to be sending strong price signals to the customer. At this time, the customer was making important investment decisions on production processes and these would have included those concerning capital expenditure on water efficiency. This fact supports, rather than undermines, the use of the LRIC methodology as a supplementary tool for access price setting in 2000-01.

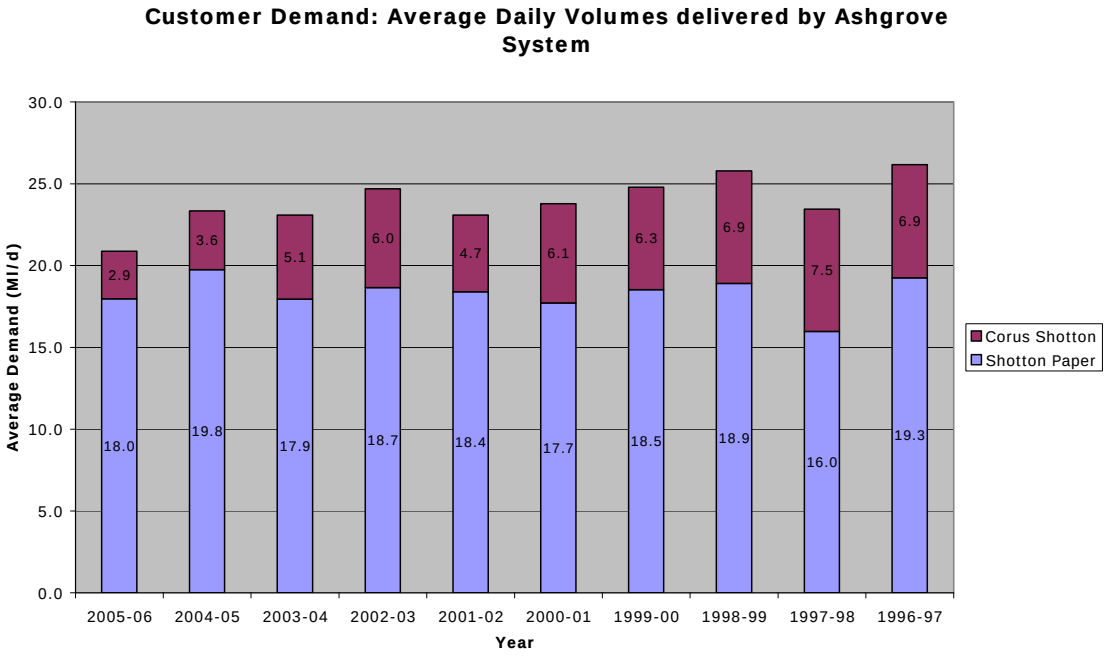
8.102 The Authority believes that combined customer demand can be described as broadly stable (ranging between 23-25 Ml/d) over the period of interest. However, demand from Shotton Paper in 2000-01 could have been considered to be potentially on the rise (as a result of the anticipated paper production changes). Indeed this possibility is reflected in the actual demand profile of Shotton Paper between 2000-01 and 2004-05.

8.103 To some extent, temporal demand trends in a LRIC model are academic. As Dŵr Cymru has noted "*the basic concept of LRIC involves the examination and quantification of the effect of a hypothetical "perturbation" to a demand projection on the least cost way of meeting a future set of demands, which themselves may show a falling or rising trend…It is also the case that the question of whether demands have actually been rising or falling is irrelevant to the methodology, because it is all about "perturbations" to a*

future stream of demands, whether or not they themselves show a positive or negative trend" (letter dated 14 May 2007).

8.104 Of more importance to the LRIC methodology is the relationship between demand (average/peak) and system capacity in 2000-01. This is now discussed in more detail.

Figure 3



Capacity Considerations in 2000-01

8.105 The average annual daily demand of both customers in 2000-01 was around 24 Ml/d. In terms of water delivered, the equivalent peak daily demand appears to have been approaching 28 Ml/d (assuming a customer peaking factor of around 1.2). This would equate to a peak flow of around 32 Ml/d at the treatment works and an average peak flow of around 30 Ml/d through the gravity main.

8.106 The evidence therefore appears to indicate that in 2000-01 the Ashgrove system (particularly the gravity main (30 Ml/d), the treatment works (32 Ml/d), the Corus lagoons[53] and the Heronbridge pumps (30 Ml/d)) was approaching its maximum daily capacity (Ml/d). In 2000-01, the average daily demand was still some 14% below its average daily capacity.

[53] In her witness statement (paragraph 13) Lynnette Cross has noted *that "in the event that Shotton were to take excessive amounts of water (20 Ml/d or more) over a sustained period, this would compromise the level of the Corus lagoons (and so Dŵr Cymru's ability to manage changes in demand)." However,* for the purpose of the Draft Assessment, the Authority has assumed that additional lagoon capacity is available from Corus for demands up to 45 Ml/d.

8.107 Dŵr Cymru has agreed with this prognosis *"[W]e would agree that the system was quite close to its maximum capacity when the customer demands were at their peak. However, average throughput was somewhat lower, so for most of the time the system was operating within its daily capacity"* (letter dated 4 April 2007, response to Q12.1).

8.108 Albion agreed with some of the capacity limits that were used in the Draft Assessment. Albion stated that "*as to the capacity of the Ashgrove system, I believe that there is agreement that the output of the Ashgrove WTW is 32 Ml/d"* (letter dated 16 May 2007). Albion originally stated that it "*is prepared to accept a figure of 30 Ml/d for the capacity of the gravity main*" (letter 19 March 2007). However, following the Draft Assessment, Albion stated "*there is, however, some dispute about the hydraulic capacity of the Ashgrove main*" (letter dated 16 May 2007).

8.109 Albion further argued that "*on 22 days that year [2000/2001] demand exceeded 20 Ml/d, with a maximum of 21.25 Ml/d on 5 February 2001. To calculate system peak demand, [the Authority] needs to know how much water Corus needed to draw from the Ashgrove system on any day"* (letter dated 21 May 2007).

8.110 Albion also provided a graph to illustrate the change in daily inlet flow at Ashgrove for the period from 1 September 2001 to 3 November 2001. The graph provided by Albion indicates that peak flows over the 3 month period selected approached 28 Ml/d (around 7% below peak distribution main capacity) on at least 3 occasions during 2001. Dŵr Cymru have also commented that "*flows fluctuate by a margin of approximately 15% around their mean*" (Dŵr Cymru letter dated 22 May 2007) – implying an operational system peaking factor for Ashgrove of at least 1.15 (broadly supporting the customer class peaking factor of 1.2 adopted in paragraph 8.106).

8.111 The Authority has assumed that the Ashgrove system was approaching its peak daily capacity of around 30 Ml/d (for the gravity main) and was around 14% below its average daily capacity in 2000-01.

8.112 Noting that the use of the LRIC methodology is not predicated on any particular demand scenario, the outstanding question is *"given these demand/capacity conditions in 2000-01 what should the scale of the increment in the LRIC methodology have been at this time?"*

Scale of Increment

8.113 In an LRIC context, it is important to be clear about what the increment is. Indeed Albion has commented that "*because of the apparent sensitivity of [the Authority's] LRIC model to demand*

increases above 18% it is very important for us (and the Tribunal) to understand the evidential basis for assuming demand increases of 20% and 50%" (letter dated 21 May 2007).

8.114 In principle, there are an infinite number of different sized increments that could be measured. Generally they are grouped into three different categories[54]: type i) small change in the volume of a particular service; type ii) the addition of a whole service; or type iii) the addition of a whole group of services. The first category is equivalent to a measurable version of marginal costs. For the Referred Work, the Authority has focused on the first category of increment but has explored the impact of increasing the increment up to 50%

8.115 The impact of the increment selected is important (see graph for illustration) and will largely depend on when the average daily capacity of the existing supply system is reached. As noted above, the Authority believes the Ashgrove system was approaching peak daily capacity and below average daily capacity (14% below 28 Ml/d) in 2000-01.

8.116 **Figure 3** highlights the classic "saw tooth" marginal cost pattern of water supply. The graph can be split into two parts (rising and peak/falling) depending on the scale of the increment. The rising part of the tooth is equivalent to the "short run" whilst the peak/falling part of the tooth is equivalent to the "long run". A reduction in the average annual (model default) demand from around 24 Ml/d in 2000-01 (on which the actual increment is based) will essentially shift the graph to the right (i.e. larger increments will be required to stimulate capital investment and hence be considered as the "long run").

8.117 At smaller increments in demand (generally below 18% of water delivered in 2000-01) it is assumed that the existing Ashgrove system will probably suffice. On those days where daily demand exceeds peak daily capacity the customers will have to draw on internal storage and/or top-up supplies (in the case of Shotton Paper using its existing back-up supply). Albion has confirmed that at existing demand levels "*Shotton Paper is capable of balancing its internal demand by the effective use of its storage on site and at Sealand*" (letter dated 30 May 2007).

8.118 At these smaller increments, the Authority has assumed, for illustrative purposes, that the incremental cost will be the sum of the short run marginal costs of the Ashgrove system (namely only the operational purchase costs of alum chemicals and trade effluent disposal) and the incremental cost of the back-up system. The 4.4 p/m³ equivalent for back-up reservation is treated as a

[54] The most commonly used increment used in telecommunications is the third one. In other words, the whole access network is defined as the one increment and total demand is taken to be equal to the increment.

fixed cost and excluded from the LRIC whilst the 33 p/m³ for the potable top-up water actually supplied is seen as truly incremental.

8.119 Again for illustrative purposes, the Authority has assumed that the proportion of the incremental volume required that is above the peak daily capacity of the Ashgrove System increases as the scale of the increment increases. This assumption is supported by the shape of the Ashgrove system supply curve in September/October 2001 – where periods of peak demand are bell shaped and can last for several days. In other words, as the average daily capacity of the Ashgrove system is approached it is assumed that more extensive use of the back-up system (for top-up) will be required by Shotton Paper (as the peak daily capacity of the system is breached more and more often).

8.120 Once the increment rises above 18% of water delivered in 2000-01, then (rather than supplying more potable top-up supply), generally it would become cheaper to expand the Ashgrove system via capital investment (see above for the possible expansion options). In addition, it is noted that water quality problems may become more acute (as the Ashgrove WTW will be operating closer to its peak capacity for longer periods).

8.121 For price signalling, given the long-term nature of water industry investment, this point (i.e. around 20%) is considered to be the best estimate of the long run incremental cost - as it includes provision for capital investment. So for the Referred Work exploring a long-run demand increment at 20% (as a type i) increment) would not seem unreasonable. At even higher increments, the long run incremental costs tend to gradually decline (as economies of scale are catered for in the associated LRIC exponential cost models).

8.122 This increment of 20% is not out of line with those selected in other utility sectors. LRMC is used to help establish transmission charges in both the electricity and gas sectors. In gas the Transcost model calculates the additional investment required in new pipelines and/or compressors to support a sustained increase in gas flow along each route. The size of the increment selected for Transcost is such that the economic signals resulting from the LRMC process are clear ("*too small an increment and the LRMC's will tend to zero, too large and they will tend to a distance related charge*"). The increment currently chosen to provide this signal is: 2,834 Ml/d for exit capacity charges and 6,000 Ml/d for (reserve) entry capacity charges. This represents (in general) an increment of around 10% and 20% of the gas flow along a route.

8.123 The results of the LRIC methodology at a 20% increment are summarised in **Table 17** below. The LRIC at this increment is based on an expansion of the existing system by installing parallel clarifiers (65% of the 9.3p/m for water treatment and sludge

management are due to capital charges) and distribution pumps (50% of the 9.9p/m³ for bulk non-potable water distribution are due to capital charges) at the Ashgrove WTW.

8.124 Dŵr Cymru has stated that "*the LRIC methodology represents a form of assessing the "lower bound" costs and therefore establishes a "floor" above which prices should be set. Dŵr Cymru reiterates that it should be seen by the Authority when the Authority comes to draw its conclusions as to the relationship between the FAP and the results of the LRIC calculation"* (letter dated 25 May 2007). On the "*use of LRIC for excessive pricing test*", Dŵr Cymru has also stated that "*any excessive pricing test that explicitly excludes the cost of some of the services that are being sought is incomplete, and can therefore not be relied upon to support a conclusion that a price is excessive*" (letter 23 May 2007).

8.125 The Authority notes that in this Final Report the LRIC in this case estimate is higher than the AAC-plus and LAC estimates and as a result has not proven to be a lower bound in the Referred Work. The LRIC results do provide underpinning support for the results of both the AAC-plus and LAC methodologies. In addition the Authority has already noted its concern about the need to provide the correct pricing signals to individual customers (skeleton arguments paragraph 13 of Annex II). The Authority stated that it "*uses Long Run Marginal Costs to underpin its pricing decisions*" and it "*would be concerned if the incentives for any given customer to use water efficiently were undermined by an artificially low access price*".

8.126 However, it is important to remember that the LRIC model is based on a number of important assumptions about what costs are not truly incremental (under system expansion at increments of 0-50%) and can therefore be excluded from the LRIC methodology. Some of the costs excluded from the LRIC expansion option are listed below:

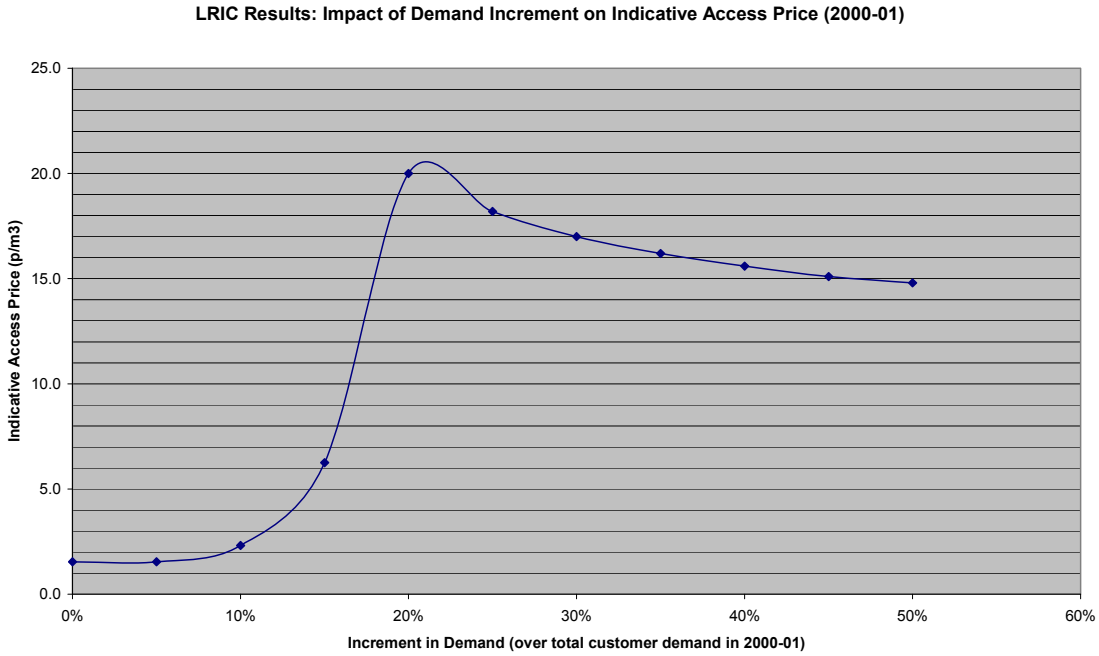
- No accommodation or building costs.
- No general infrastructure costs at Ashgrove WTW (e.g. existing roads, fencing, power connections, standby generators all suffice) for either clarifier expansion or pump installation.
- No additional investment in sludge transport (sludge main or sludge pumps suffice)
- No incremental flow management costs and no additional investment/expenditure in water storage (existing Corus lagoons suffice).
- No need for additional pumping investment at Heronbridge (not part of common carriage system).

- No fixed back-up supply costs (except for top up water actually supplied in the short run).
- No general business costs – doubtful debts, general expenditure and scientific services excluded.
- No common carriage service costs included.

Table 17 - Results of the LRIC model

LRIC Increment of 20%	
Raw Water Aqueduct	0
Water Treatment	7.4
Sludge Management	1.9
Bulk Non-potable Distribution	9.9
Water Storage	0
Operational Control	0.8
Back-up Supply	0
Common Carriage Services	0
Total	20.0

Figure 4



9. DETAILED DESCRIPTION AND APPLICATION OF THE LAC METHODOLOGY

(1) INTRODUCTION

9.1 The Tribunal has at various points during the Shotton case indicated that it would like to see evidence of local accounting cost information. The LAC aims to calculate Dŵr Cymru's local costs for the partial treatment and distribution functions associated with the Ashgrove system.

9.2 The Authority explained in its letter of 17 April 2007 to Albion and Dŵr Cymru that the LAC is not a methodology that the Authority employs in a regulatory context as it traditionally regulates prices and tariffs on a regionally averaged basis.

9.3 Where the parties have informed the Authority that local accounting cost information is not available, the Authority has requested the parties to provide justifications of why they have proposed certain assumptions. The Authority has used alternative techniques to estimate local costs (e.g. from local staffing levels and staffing costs, local rental costs, engineering cost factors, physical asset lives, capital asset pricing model) including to test the parties' estimates and assumptions.

9.4 For reasons of consistency with previous correspondence and simplicity, the Authority is using the term LAC. However, due to the difficulties with the LAC methodology (most notably the lack of reliable local accounting cost information) the Authority highlights the fact that the word "accounting" in local accounting costs is not an accurate description of this methodology, and a more accurate

description is Local Hybrid Costs (as discussed in the table under paragraph 8 as well as paragraph 11, Annex II, of the Authority's skeleton arguments). The methodology draws on three main sources of information: local accounting costs where available; local cost estimates; and, where appropriate, the results of the AAC-plus methodology.

9.5 The LAC methodology estimates individual local costs (capital charges, capital maintenance and operating costs) for each functional activity and adds a contribution for common costs, the costs of the back-up supply and the cost of common carriage services. The rest of this section provides more details on the LAC model.

(2) THE CAPITAL BASE, RETURN ON CAPITAL AND CAPITAL MAINTENANCE COSTS

The capital base

9.6 The Authority uses a capital base which the Authority has called the MAC in the LAC model.

9.7 The MAC is an attempt to estimate the "RCV–equivalent" of the Ashgrove system. As discussed in RAG 1.04 the concept of capital (economic) value in a regulated industry is complex (see paragraphs 1.7.5 and 1.13.4). The Authority has developed the RCV for regulatory purposes and it is primarily used in setting price limits. However, the Authority does not calculate RCVs for individual supply systems. This difficulty was explained in paragraph 10, Annex II, of the Authority's skeleton arguments.

9.8 The MAC for the Ashgrove system has been calculated by applying the ratio between MEAV and RCV at company level for water supply for Dŵr Cymru (12%) to allow for the capital value discount at privatisation. This rough adjustment significantly reduces the capital base of the Ashgrove system. There is a question whether this adjustment underestimates the value of the Ashgrove system as the capital value discount applied disproportionately to network costs and domestic customers or whether it overestimates the value of the Ashgrove system because the Ashgrove system might be older than Dŵr Cymru’s average asset age.

9.9 In the MAC, the start MEAV is based on the existing asset to which access was sought in 2000/01 prices.

9.10 The Authority estimated the MEAVs by applying standard costs from the appropriate cost base (in this case 1997/98) (the closest cost based data to 2000/01). To develop MEAVs for each activity these standard costs have been adjusted for:

- asset scale (by appropriate exponential cost models);
- asset nature (by appropriate cost relationships); and
- real life complexity (by site-specific uplifts).

9.11 Following the report from the engineering consultants Mott MacDonald on 6 June 2007, the Authority reconsidered its capital cost estimates. **Table 18** below summarises the asset costs estimated by Mott MacDonald (excluding the 17% On Cost), the MEAVs used by the Authority, the reason for any difference and the adjustment from MEAV to the MAC values used in the LAC model.

Table 18 – Capital values used in the LAC model

All figures in £ in 2000/01	**(1) Mott MacDonald MEAV estimate**	**(2)The Authority's MEAV estimate**	**(3) Reason for any major differences**	**(4) MAC in the LAC model (12% of column 2)**
Raw water aqueduct	496,500	389,474	The Authority uses a 20% uplift on standard cost base. Mott MacDonald uses a higher unit cost.	47,000
Ashgrove partial treatment works	3,770,000	3,646,000	The Mott MacDonald estimate is lower than the one in its 6 June 2007 report as it was recalculated using the correct (and smaller) clarifier area. The Authority uses a 20% uplift on standard cost base	437,500
Sludge management / disposal	1,359,000	543,000	The Mott MacDonald estimate is lower than the one in its 6 June 2007 report as it has been recalculated with information provided by Dŵr Cymru on 7 June 2007	65,000

			that the sludge main was 1.65km long and had no pumps.	
Treated water main	10,365,000	9,669,000	The Authority uses a 20% uplift on Dŵr Cymru's standard cost base. Mott MacDonald uses a higher unit cost.	1,160,500
Control and metering	341,500	334,000	N/a	40,000
Total	16,332,000	14,581,500		1,750,000

9.12 As **Table 18** shows, making the adjustment from MEAV to MAC substantially reduces the capital value of the assets to which Albion sought access in 2000/01.

9.13 The Authority's estimate of the MEAV of the Ashgrove system in the Referred Work is £14.5 million compared to £8.5 million in its assessment of Dŵr Cymru's standalone cost calculation for the 2006 hearing. The difference mainly reflects two factors. First, the parties and the Authority have identified additional services during the course of the Referred Work such as sludge management and control and metering that were not fully included in the Authority's assessment for the 2006 hearing. Secondly, in that assessment the Authority used its own benchmark costs which are based on the most efficient company's costs with no allowance for site-specific features (although the Authority allowed some site-specific uplifts in its standalone cost calculation). However, in the LAC methodology the 12% conversion to MAC is based on the ratio of Dŵr Cymru's estimate of its MEAV to the RCV of Dŵr Cymru. As a result, to apply that ratio to obtain the MAC the Authority needs to start with an MEAV estimate of the Ashgrove system based on reasonably uplifted WSH standard unit costs (which have been supported by the work of the independent cost engineers.

9.14 Dŵr Cymru has objected to the use of the MAC on several occasions during the Referred Work. Dŵr Cymru considered that the application of the capital value discount to the assets meant that "*the LAC methodology produces prices that are based on the use of subsidised assets*" (first letter of 25 May 2007, page 8 and third letter of 25 May 2007, page 4).

9.15 In response to Dŵr Cymru's point the Authority notes that in a regulatory context the Authority allows appointed water companies to earn a return on their RCV rather than their MEAV to reflect the

capital value discount at privatisation. The AAC methodology used for setting tariffs and which Dŵr Cymru used to calculate the FAP allows appointed water companies to earn their regulated return on the RCV of their assets not their MEAV. The MAC is a rough attempt to allow for the capital value discount for a specific asset so that the specific asset is valued on the same basis as the rest of Dŵr Cymru's assets.

9.16 In the Draft Assessment, the Authority referred to the asset values being taken from the LRIC model based on a 100% demand increment. However, it considers that these statements might have over-complicated matters. In the LAC model, as explained above, the MAC capital values are derived as 12% of the Authority's estimate of the MEAV of each asset. In the LRIC model, those MEAVs have be used to cost a 100% demand increment (as explained at paragraphs 8.92 and 8.93), but it is simpler and more reflective of the approach the Authority actually used to think of the LAC asset values as 12% of the MEAV of the assets involved in providing the common carriage service.

9.17 As explained in Section 6, Albion apparently understood that LAC was based on the LRIC model at a 100% increment and that the LAC results were highly sensitive to demand change assumptions. However, the Authority explained at the tri-partite meeting held on 18 May 2007 that the LAC model does not rely on the LRIC model increments and is not sensitive to the demand change assumptions (transcript page 4, line 25 to page 5, line 9).

9.18 Dŵr Cymru considered that if the LAC methodology was based on the capital base in the LRIC model it would "*certainly exclude certain items that ought to be included in the LAC methodology*" (first letter of 25 May 2007, page 7). However, the LAC methodology is not solely based on the capital base of the LRIC model and it includes items such as the back-up supply which are not included in the LRIC model results.

9.19 In Albion's second letter of 7 June 2007, Albion suggested that the engineers' work for the Authority had "*focused on a "stand-alone" cost for the Ashgrove syste*m" (page 1). The Authority explained in its reply of 12 June 2007 that the Authority was not producing a standalone cost calculation for the Referred Work. Rather, as set out above, the Authority explained that it would be using the engineers' estimate to inform its own estimate of the MEAV of the Ashgrove system which in turn serves as the basis for the MAC capital base used in the LAC model.

Capital costs

9.20 The LAC model calculates capital costs by applying the cost of capital to each asset value (on a MAC basis). See Section 6B1 for an explanation of the cost of capital used.

Capital maintenance costs

9.21 For capital maintenance costs (depreciation and infrastructure renewals) the LAC model uses standard regulatory approaches. The level of future capital maintenance charges is based on an understanding of expected levels of infrastructure renewals expenditure/non-infrastructure expenditure based on typical asset lives and historic evidence of the level of capital maintenance expenditure on other distribution systems (with a consideration of whether, and what, cost adjustment is needed).

(3) FUNCTIONAL DISAGGREGATION OF THE LAC COST ESTIMATE

(i) Raw Water Aqueduct

9.22 This item is the cost of the raw water aqueduct from Heronbridge (the point at which the water leaves the United Utilities' pipe) to the Ashgrove WTW. The existing raw water pipeline is 700mm in diameter and 763m in length in a rural environment. There are no pumping costs associated with the length of the raw water main owned by Dŵr Cymru to which Albion sought access, so no pumping costs have been included in the LAC model.

9.23 The MAC capital base is derived as 12% of the local asset value of the MEAV of the raw water aqueduct. The MAC capital charge is calculated as the cost of capital multiplied by the MAC asset base. The capital charge on this basis is negligible.

9.24 The depreciation charge on raw water aqueducts is calculated by the local asset value depreciated over 120 years. The long depreciation period reflects the long-lived nature of underground assets.

9.25 Direct operations costs for the raw water aqueduct are negligible.

(ii) Water Treatment

9.26 This item is the cost of a partial treatment works at Ashgrove. The standard cost for water treatment is for the construction of a new treatment works (type SW2), lowland source, with treated water output of 30Ml/d. It is based on simple physico/chemical treatment with no pumping or screening but includes buildings (administration and control, filters, chemical storage and dosing), electrical and instrumentation. The scale exponent ratio is assumed to be 0.69.

9.27 The standard cost also includes chlorination facilities, a contact tank (30 minutes) and filtration and these costs are removed from the standard water treatment cost in the LAC model. The cost of the filtration unit is assumed to be equivalent to the standard cost for the replacement of a filtration system at an existing WTW

(which includes filter building including upper filter gallery). The costs of a small tank (30 minutes residence time) have been used to proxy the contact tank and chlorine dosing equipment costs have been estimated and excluded.

9.28 The standard cost for water treatment excludes standby generators and associated switchgear, roads, fencing and landscaping. Some of these excluded costs have been incurred at the Ashgrove WTW and have been accounted for by the 20% site specific inflator.

9.29 The MAC capital base is derived as 12% of the MEAV of the partial treatment works at Ashgrove. The MAC capital charge is calculated as the cost of capital multiplied by the MAC asset base.

9.30 The depreciation charge on the partial treatment works is calculated over 20 years for its mechanical components, 60 years for its civil components and 10 years for its electrical components.

9.31 The Authority has used accounting evidence on direct operating costs (0.4p/m^3) from the Ashgrove water treatment cost centre (2000-01). It has also used cost evidence from the reactive maintenance schedules for the Ashgrove WTW (0.2p/m^3 averaged over number of years: 2002/03-2005/06). The Authority has used purchase cost information for the chemicals (0.5p/m^3) and electricity (0.1p/m^3) costs.

(iii) Sludge management

9.32 The partial water treatment process at Ashgrove produces sludge which needs to be managed. The standard cost for water treatment assumes that no sludge storage or sludge treatment facilities are required; it is assumed that sludges from all process units are disposed of to sewer which is conveniently situated within the site. However, some preliminary sludge processing is undertaken at Ashgrove WTW before it is transported off site via a dedicated sludge main. "*The sludge flows under gravity to two sludge thickeners. The sludge is allowed to settle, the supernatant water is decanted off and pumped back up to the head of the works. The sludge is then transported via a pumping main to a connection with a public sewer*" (letter from Dŵr Cymru to the Authority dated 5 March 2007, response to Q1d).

9.33 Dŵr Cymru explained in a letter of 7 June 2007 that the length of the sludge main from the thickeners to the sewer is 1.65km and that there was no further pumping on the sludge main. Dŵr Cymru explained that once the sludge passes into the sewer it is pumped twice on its way to Chester wastewater treatment works. The Authority calculated its MEAV and MAC estimates for sludge management on this basis. However, this information was not available to Mott MacDonald for its report of 6 June 2007.

9.34 Sludge disposal costs are largely determined by the flow and suspended solids concentration of the thickened sludge. For the Final Report, the Authority has assumed that the equivalent average suspended solids concentration in 2000/01 (based on 0.5% sludge flow) would have been around 5,000 mg/l. In 2000/01, the equivalent trade effluent charge would have been around 180 p/m³. Based on these assumptions the equivalent sludge disposal cost would have been around 1.0p/m³ in 2000-01. This estimate of sludge solids flow has been cross-checked by estimating the theoretical solids load that would have been produced in the clarifier.

(iii) Water Distribution

9.35 This item is the cost of distribution under gravity from the Ashgrove treatment works to the Shotton Paper site. The existing Ashgrove main is a steel pipe, 700mm in diameter with a length of 15,744m. The route is 26% suburban and there are 133m of rail crossings.

9.36 The MEAV for the non-potable distribution main is calculated by the following formula:

Csub-urban = R* Csuburban100mm * D ^ [alpha*D/(beta+D)]
Cgrass = (1-R)* Cgrass100mm * D ^ [alpha*D/(beta+D)]
Ci = A * Bi * [Csuburban + Cgrass] * L + Ei

9.37 Where Ci is the capital cost of the infrastructure asset (£); D is the estimated main diameter (mm), R is the proportion of the pipe length that is classified as suburban (%), L is the length of pipe (m), Ei is the site-specific inflator to allow for missing items from the standard cost (e.g. river and rail crossings, landowner compensation) and C100mm is the standard main laying cost (£/m) for a 100mm pipe in rural and suburban surface types respectively. Alpha and Beta were determined manually within the LAC model by comparing the modelled main laying cost with those obtained in the standard cost base. A is the COPI inflator from standard cost base year (%) and Bi is the site specific condition inflator for infrastructure assets (%).

9.38 Dŵr Cymru has provided a manual survey of the Ashgrove mains (see second witness statement of Christopher Alun Jones) and this analysis (but only the split between rural and suburban) has been used in the LAC model.

9.39 The Authority considers it will be impossible to assess the impact of all the other “locational” and “engineering” factors on company standard costs from visually inspecting OS maps or undertaking a manual survey. The Authority has used a company standard cost

"mark-up" to account for such adverse conditions and complications.

9.40 The Authority has used cost information about the "A550 project" to inform the level of the site-specific inflator for main laying. In 1995 around 1,000 metres of the Ashgrove main (alongside/under the A550 road) was replaced. Dŵr Cymru has subsequently estimated that "*the A550 project cost £514,000*" (letter from Dŵr Cymru to the Authority dated 4 April 2007, response to Q5) and commented that "*the terrain was overwhelmingly rural, although the new main does cross the A550 itself*" (letter dated 7 June 2007). This project cost equates to around £615 per metre in 2000/01 prices.

9.41 The cost engineers have estimated that the unit (700mm diameter) pipe laying cost for the raw water aqueduct and the non-potable distribution main were £651 per metre and £658 per metre respectively in 2000/01. These unit costs are comparable to both the A550 project unit cost of £615 per metre and the unit MEAV cost (for 620-720mm) of £677 per metre that was used by Dŵr Cymru to develop its company MEAV estimate in 1997/98. These unit costs (of around £650 per metre) would support a site specific inflator of 20% for large diameter main laying between Heronbridge and Shotton.

9.42 The contaminated land issue has been managed by the site specific inflator (identified above) whilst the crossings issue has been catered for by assuming an incremental cost of £1,000 per metre for rail/river crossings.

9.43 The MAC capital base is derived as 12% of the MEAV of the asset. The MAC capital charge is calculated as the cost of capital multiplied by the MAC asset base.

9.44 The infrastructure renewals charge on the distribution main is calculated over 120 years.

9.45 Direct operation costs are negligible. The Authority has nevertheless used inspection records of trunk main operation and maintenance (2004-05) to verify the direct operation costs.

(iv) Water Storage

9.46 This item is the cost of using the Corus lagoons for water storage. Dŵr Cymru has stated that "[*w]e do consider that the full cost of using the lagoons should be attributed to Shotton Paper because of two unusual demand characteristics. First, because of the nature of their processes, their volumetric demand can drop dramatically at any time. Second, unlike the majority of other large potable and non-potable customers they do not have significant on-site storage that could act as the buffer between their processes and the water*

supply system" (letter from Dŵr Cymru to the Authority dated 4 April, response to Q2d).

9.47 The equivalent usage cost in 2000-01 was £86,246 (second witness statement of Christopher Alun Jones). Dividing by the average volume delivered to Shotton in 2000-01 yields 1.3p/m³.

9.48 In a letter of 21 May 2007, Albion asked why the rental cost should not be divided by all the volumes (including those of Corus) which use the lagoons which Albion said would reduce the unit cost to approximately 1p/m^3. The Authority considers that the benefit for which Dŵr Cymru pays for using the lagoons accrues to Shotton Paper alone and that therefore Shotton Paper's volumes should be used as the denominator in the calculation.

(v) Operational Control

9.49 The items making up operational control are computer facilities at the Bretton WTW and the associated telemetry/metering. Telemetry and automation included in standard costs is limited to local control and provision of suitable signals only, for subsequent capture by an assumed existing regional telemetry system. Regional telemetry and control systems are therefore excluded from standard costs. Hence since telemetry systems have been installed for both water treatment and water storage this item has been included in the Ashgrove system MEAV estimate.

9.50 Between 1989 and 1991, the Ashgrove system was fully automated. Expenditure on the Ashgrove WTW refurbishment was around £329,000[55] (1989/90 prices), whereas expenditure on the Sealand automation was around £242,000[56] (1990/91 prices). However, only part of this combined automation expenditure of around £571,000 (or £674,000 in 2000-01 prices) can be considered as indicative of the capital cost of the regional telemetry system.

9.51 Dŵr Cymru has commented on the capital cost of these regional telemetry assets (outstations, programmable logic controllers) and the hardware and software at Bretton itself. It has stated that "*based on the knowledge and recent experience of local managers, our indicative MEAV estimate is £335,000 in current prices*" (letter from Dŵr Cymru dated 13 April, response to Q1h). This is around 50% of the combined actual automation expenditure of £674,000 identified above.

9.52 In the LAC model, the telemetry cost has been estimated by applying a telemetry cost factor to the water treatment and water storage capital cost estimate. For items over £300,000 the

[55] Letter from Dŵr Cymru to the Authority dated 9 March 2007, response to Q5.
[56] Letter from Dŵr Cymru to the Authority dated 4 April 2007, response to Q5.

telemetry cost factor[57] tends to range from 5-15%, depending on the actual cost of the item. To reflect these scale effects, the lowest telemetry/control factor of 5% has been applied for water treatment with the mid-point of 10% being applied for water storage. A separate cost estimate has been made for the computer control equipment at the Bretton WTW. These cost factors are broadly confirmed by: i) the indicative telemetry/control capital cost estimate of £335,000 that has been provided by Dŵr Cymru; and ii) the independent cost estimate provided by the cost engineers.

9.53 The MAC capital base is derived as 12% of the MEAV of the assets involved in providing operational control. The MAC capital charge is calculated as the cost of capital multiplied by the MAC asset base. The capital charge is negligible.

9.54 The depreciation charge on operational control is calculated by the local asset values depreciated over 5 years for hardware additions, 10 years for telemetry and 15 years for meters.

9.55 Christopher Alun Jones (in his second witness statement) has stated that "*Bretton managers have estimated that the management of the Ashgrove system would account for 12% of the workload for each of the 3 inspectors, and 5% of the workload for each of the 5 controllers*". In 2000-01 the direct operational staff costs were estimated at around £15,756 pa (see second witness statement of Christopher Alun Jones, paragraph 7, Annex 5). The inferred direct system operational cost was around 0.2p/m³ in 2000-01.

(vi) and (vii) Common costs: General and support expenditures and business activities

9.56 Common costs consist of the following items: rates; doubtful debts; scientific services; regulatory services; management and general services; and general and support expenditure. More details are provided below.

9.57 The Authority has made local estimates of common costs given the Tribunal's views in favour of seeing local cost information. In some cases the Authority has used average accounting costs where they are a more reliable measure of common costs. In a letter of 22 May 2007, the Authority provided a table explaining how the common costs in the LAC model are calculated. An updated version of that table is below (**Table 19**).

57 Table 4.5 Installation sub-factors for main plant items, *Guide to Capital Cost Estimating*, AM Gerrard, Institution of Chemical Engineers, 2000

Table 19 – Common costs used in the LAC model

Cost item	LAC (p/m^3)	LAC Allocation Basis
Rates	0.6	Rates as a proportion of attributable profit.
Doubtful debts	0.5	3.5% of all other local "accounting" costs.
Scientific services	0.1	Equates to local cost estimate, approximately £10,000 per annum.
Regulatory services	0.2	Volume delivered (AAC based).
Management and General	0.6	Proportional to direct costs (AAC based).
General and Support	2.2	70% all local direct operational costs. Includes insurance cost of 0.3p/m^3. Note, also includes a management on-cost for Corus lagoons.
Total	4.2	
% Total Cost	23%	

9.58 When considering common costs a balance has to be struck between including too many common costs and including too little. Dŵr Cymru raised a concern that the LAC model needs to ensure that if the LAC approach was applied to all customers that the resulting price would correctly recover the revenue requirement (letter of 11 May 2007). The Authority accepts that this should be the case and has therefore made appropriate allowance for common costs in the LAC model. On the other hand, Albion has questioned the inclusion and the amount of the common costs used in the LAC model (letter of 24 May 2007).

9.59 The Authority would refer the parties to the discussion of common costs in Section 5. The parties do not appear to dispute that Albion would need to make some contribution to Dŵr Cymru's common costs in an access price for the Ashgrove system. As the OFT guidance explains "[*W]hether and how [common costs should be allocated] will depend on the circumstances of the case*" (paragraph 2.13, OFT 414a). The Authority considers it has made a fair allocation of common costs in the LAC methodology in this case, acknowledging that there are no prescriptive rules in competition law on how such an allocation should be made.

(viii) Back-up Supply

9.60 For the reasons set out in Sections 5 and 6B(3) above, the Authority's view is that the back-up supply should be included in the LAC methodology and the cost amounts to 4.4p/m^3.

(ix) Common Carriage Services

9.61 For the reasons set out in Sections 5 and 6B(2) above, the Authority's view is that common carriage services should be included in the LAC methodology and that they amount to 0.3p/m^3.

Table 20 - Results of the LAC methodology

	LAC
Raw Water Aqueduct	0.1
Water Treatment	3.0
Sludge management	1.4
Bulk NP Distribution	2.5
Water Storage	1.3
Operational Control	1.1
Management, General and Support	2.8

Expenditure	
Business Activities	1.4
Back-up Supply	4.4
Common Carriage Services	0.3
Total	18.5

Notes:
The numbers do not add up exactly due to rounding.
Business activities consist of: rates, doubtful debts, scientific services and regulatory services.

10. RESULTS FOR METHODOLOGIES USED TO DETERMINE THE FIRST ISSUE

10.1 The three methodologies result in the following costs reasonably attributable to the relevant services:

Results of the AAC-plus methodology

AAC-plus	
Raw Water Aqueduct	1.2
Water Treatment (including sludge management)	5.3
Bulk Non-potable Distribution	2.3
Water Storage	1.0
Operational Control	0.3
Management, General and Support Expenditure	2.1
Business Activities	2.4
Back-up Supply	4.4
Common Carriage Services	0.3
Total	19.3

Results of the LRIC methodology

LRIC, 20% increment	
Raw Water Aqueduct	0.0
Water Treatment	7.4
Sludge management	1.9
Bulk Non-potable Distribution	9.9
Water Storage	0.0
Operational Control	0.8
Management, General and Support Expenditure	n/a
Business Activities	n/a
Back-up Supply	n/a
Common Carriage Services	n/a
Total	20.0

Results of the LAC methodology

LAC	
Raw Water Aqueduct	0.1
Water Treatment	3.0
Sludge management	1.4
Bulk Non-potable Distribution	2.5
Water Storage	1.3
Operational Control	1.1
Management, General and Support Expenditure	2.8
Business Activities	1.4
Back-up Supply	4.4
Common Carriage Services	0.3
Total	18.5

PART III: THE SECOND ISSUE – WHETHER THE FIRST ACCESS PRICE IS UNFAIR

The Authority has also considered the issues that need to be taken into account when deciding whether the FAP is unfair within the meaning of the Chapter II prohibition.

The Tribunal asked the Authority to investigate "*whether, in the light of those costs, the FAP was an unfair price within the meaning of the Chapter II prohibition*" (see paragraph 280 of the Further Judgment).

In *United Brands*, the ECJ set out the following test as a means of determining whether a price is an unfair price within the meaning of Article 82(a):

> "*The questions therefore to be determined are whether the difference between the costs actually incurred and the price actually charged is excessive, and, if the answer to this question is in the affirmative, whether a price has been imposed which is either unfair in itself or when compared to competing products*".

11. THE FIRST STAGE IN *UNITED BRANDS:* WHETHER DIFFERENCE BETWEEN THE COSTS ACTUALLY INCURRED AND THE FIRST ACCESS PRICE IS EXCESSIVE

11.1 The test suggested by the ECJ is thus a two-stage test. The first limb of the test consists in comparing the price with some measure of cost. A positive price-cost margin shows that the price exceeds the cost. However, as Dŵr Cymru submitted in its letter of 16 May 2007, that is not necessarily sufficient to establish that the price is "excessive" for the purposes of the first limb of the test. The Authority agrees that there is a distinction between "an excess of" price over cost and whether a price is "excessive".

11.2 In the *Scandlines* case[58], the Commission drew the preliminary conclusion that "*the mere fact that revenues may exceed costs actually incurred is not sufficient to conclude that the price is 'excessive' in the meaning of the first question posed by the Court in paragraph 252 of the United Brands judgment*" (paragraph 142). However, the Commission did not go on to express any views on when an excess of revenues over costs becomes "excessive"; nor is there any guidance in *United Brands* itself.

11.3 In the Authority's view, a price may not be "excessive" within the meaning of the first limb of the test where the price exceeds costs but not by a material extent.

[58] Case COMP/A.36.568/D3 – *Scandlines Sverige AB v Port of Helsingborg.*

11.4 The Authority has therefore considered whether the positive price-cost margin in this case establishes that the FAP is "excessive" for the purposes of the first limb of the test.

11.5 The Authority here presents the results of the extent to which the FAP exceeds the range produced by AAC-plus, LRIC and LAC, noting that it considers the AAC-plus methodology the most appropriate in the circumstances of this case, but where it has used LRIC and LAC as cross-checks:

Table 21

	Result of methodology	**FAP**	**Percentage by which FAP is above the result of the methodology**	**Monetary value per year**
AAC-plus	19.3	23.2	20%	£252,000
LRIC	20.0	23.2	16%	£207,000
LAC	18.5	23.2	25%	£304,000

11.6 The Authority does not consider that there is any single percentage of excess which, in all circumstances, constitutes the threshold for materiality. In its letter of 16 May 2007, Dŵr Cymru submitted that the Authority was correct to have stated in the Draft Assessment that no single quantitative threshold would be appropriate, given the range of circumstances which could pertain to any case and the large margin of appreciation inherent in the concept of unfair pricing. The Authority maintains that approach. The Authority considers that in the circumstances of this case, an excess of 16% (using the lowest of the figures produced by the three methodologies, i.e. the LRIC cross-check) cannot be dismissed as immaterial. In practical terms, the percentage by which the FAP is above the costs reasonably attributable to the relevant services as calculated under that methodology, means that Albion would have been paying £207,000 per year more than it would if the price were equal to that cost, based on a volume of water purchased of 6,468.5Ml at the time the FAP was offered i.e. in 2000/2001[59]. The percentage excess, and the practical impact on the price that would have been paid by Albion, is greater if the figures from the other two methodologies, namely the main AAC-plus methodology and LAC cross-check, are used. The Authority concludes that, even on the basis of the LRIC result alone, the excess is material and, in view of the results produced in particular by the AAC-plus methodology in this case, is sufficient to conclude that the FAP is "excessive".

[59] The Authority's Special Agreements Register

12. THE SECOND STAGE IN *UNITED BRANDS*: WHETHER THE FIRST ACCESS PRICE IS EITHER UNFAIR IN ITSELF OR WHEN COMPARED TO COMPETING PRODUCTS

12.1 Since the answer to the first limb of the test is affirmative, the Authority has considered the second limb of the test. Under the second limb of the *United Brands* test, the matter to be determined is "*whether a price has been imposed which is either unfair in itself or when compared to competing products*" (or in this case, competing services).

12.2 Implicit in the second limb of the test, is recognition that not all instances of prices in excess of costs constitute an abuse of dominance. Some have argued that an excessive price constitutes in itself an abuse of dominance. This was the case in *Scandlines*[60] case where (at paragraph 144) Scandlines submitted that "*a price which exceeds above a reasonable margin the costs of providing the services in question is both 'unfair in itself and abusive' within the meaning of Article 82*." However, the Commission explicitly stated (at paragraph 149) that the ECJ made a clear distinction between "excessive" and "unfair" and that "[*H]ad it been otherwise, there would have been no reason for the Court, once the first question has been answered in the affirmative, to proceed to the question whether the price is unfair*".

12.3 According to the ECJ, only in a case where the price, whether purchasing or selling, is "unfair" would there be an abuse of dominant position. No precise definition of either "unfair" or of "cost" (apart from being "actually incurred") is proposed by the ECJ, such definition being subject to interpretation.

12.4 The ECJ's view has also been echoed more recently in the OFT's draft Guidelines on the *"Assessment of conduct"* ("the OFT Guidelines") which note the importance of distinguishing *"excessive prices from seemingly high prices that are an integral part of the competitive process*".[61]

12.5 One method of testing for an unfair price suggested by the ECJ is by comparing it to competing products. In the *United Brands* case, a comparison by the ECJ revealed that United Brands' prices were 7% above competitors' prices; a margin which the ECJ claimed "*cannot automatically be regarded as excessive and consequently unfair*."

12.6 In the UK, and similar to Article 82, the 1998 Act does not provide precise rules for assessing excessive pricing. The OFT Guidelines refer to the *United Brands* case where the ECJ stated that

[60] Case COMP/A.36.568/D3 – *Scandlines Sverige AB v Port of Helsingborg*
[61] OFT draft Guidelines on *"Assessment of conduct"*, OFT 414a, April 2004, paragraph 2.5.

"*charging a price which is excessive because it has no reasonable relation to the economic value of the product supplied…would be..an abuse*"[62] .

12.7 In the rest of this section, the Authority will examine whether the FAP can be considered unfair when compared to other prices. In the following section, the Authority will consider whether the FAP can be considered unfair in itself.

THE SECOND STAGE IN *UNITED BRANDS* (1): WHETHER THE PRICE IS UNFAIR WHEN COMPARED TO COMPETING SERVICES

12.8 At the tri-partite meeting on 20 February 2007, the Authority asked Albion and Dŵr Cymru for their views on how they considered the Authority should assess whether the FAP is unfair. This question was repeated in the Authority's written information requests to Albion and Dŵr Cymru on 27 February 2007.

Albion's views on comparators

12.9 In a letter of 12 March 2007, Albion argued that the principal task set for the Authority by the Tribunal is to arrive at some accurate measures of the costs of distribution of non-potable water and a comparison of those costs with Dŵr Cymru's costs of distributing potable water. The Authority has carried out an investigation into "*the costs reasonably attributable to the service of the transportation and partial treatment of water by Dŵr Cymru, generally and through the Ashgrove system in particular*" (Further Judgment, paragraph 360(iii)) as the Tribunal required. However, the Tribunal also asked the Authority to carry out the further investigation "*together with the associated question of whether, in the light of those costs, the First Access Price was an unfair price within the meaning of the Chapter II prohibition*" (Further Judgment, paragraph 360(iii)). The remit given by the Tribunal requires the Authority to consider both limbs of the United Brand test and "*whether a price has been imposed which is either unfair in itself or when compared to competing products*".

12.10 In the same letter of 12 March 2007, Albion's second point on comparators was that it appeared clearly from the judgments that the Tribunal saw difficulties in drawing comparisons between the prices Dŵr Cymru charged to other non-potable customers. Albion referred to paragraphs 753 to 757 of the Main Judgment and paragraphs 371 to 375 of the Interim Judgment. In those paragraphs, the Tribunal was considering the validity of comparators the Authority used when giving an indicative determination of the SBSA price in 1996. However, in those paragraphs the Tribunal was not ruling out the assessing of

[62] "OFT draft Guidelines on *"Assessment of conduct"*, OFT 414a, April 2004, paragraph 2.1.

comparators for the FAP which, in any case, the *United Brands* test requires.

12.11 The third point Albion argued in its letter of 12 March 2007 was that, although the Tribunal accepted that there was no direct "read across" from the costs of raw water distribution to the costs of non-potable distribution, the Tribunal did attach some weight to the striking disparity between those costs. Albion referred to paragraphs 561 to 563 of the Main Judgment and paragraph 237 of the Further Judgment. Albion's use of raw water distribution costs became known during the appeal as Methodology 2.

12.12 The Authority has explained why Albion's use of raw water aqueducts is not an appropriate comparator in the Authority's Defence, Rejoinder and Skeleton arguments for the hearings. In summary, the Authority found the fundamental flaw in Methodology 2 was that the average distance per source of a raw water aqueduct is relatively short (around 2.5km). On a regional average basis, raw water aqueducts are far shorter than bulk distribution mains (mains > 600mm in diameter) – whether potable, non-potable or bulk raw water mains. As a result it is not surprising that the regional average cost for raw water aqueducts is much lower than for bulk distribution to a customer's site of either non-potable or potable water. Therefore the Authority does not consider that Albion's Methodology 2 on raw water aqueducts is a suitable comparator for the FAP.

12.13 Albion suggested in a letter of 26 February 2007 that the Authority should use a "raw water plus" model to validate its estimates of non-potable costs. The Authority replied on 9 March 2007 that it would not be using a fourth methodology in the Referred Work but stated that if Albion wanted to submit its own "raw water plus" model the Authority would look at it. In a letter dated 5 April 2007, Albion stated that it planned to submit a new "raw water plus" model to the Authority after 27 April 2007. In its first letter of 21 May 2007, Albion stated that it would *"research Dŵr Cymru's AIS system to investigate raw water aqueducts more fully"* and it would share the results of that analysis with the parties as soon as possible. Albion presented its preliminary conclusions on the comparability of raw water and non-potable mains in its fourth letter of 30 May 2007. Albion stated that its conclusions provided "*no evidence to support the view that boreholes are served, on average, by some 2.5km of raw water main*" (page 2). Albion noted the work was incomplete but that it intended to complete its analysis as far as it was able and to submit the results by 6 June.

12.14 In its second letter of 8 June 2007, Albion provided the further results from its studying of Dŵr Cymru's AIS system. Albion limited its comments to the Court Farm system given the limited time and resources available. The Authority also discusses Court Farm in Section 7 above.

12.15 Notwithstanding the arguments set out at 12.9 and 12.10 above, during the course of the Referred Work, Albion raised the issue of the special agreement WSHNONPOT8 in letters to the Authority dated 2 February 2007, 12 February, 10 April, 16 May (second and third letters of that date), 17 May, 21 May (second and third letters of that date), 30 May (first and second letters of that date) and at the tri-partite meeting on 18 May 2007 (transcript page 88, line 5 to page 91, line 25). Albion complained about the low price paid under WSHNONPOT8 which is the volumetric equivalent of around 4.7p/m^3 in 2004/05. On 5 April 2007, the Authority replied to Albion explaining that the unusually low price for WSHNONPOT8 reflects an agreement under which Dŵr Cymru is compensating the customer for giving up capacity to which the customer had been exclusively entitled. The Authority sent further letters to Albion on this subject on 17 May 2007 and 30 May 2007 providing details of how it had assessed WSHNONPOT8 under its regulatory powers in relation to Condition E. The Authority also explained in those letters that it considers WSHNONPOT8 is not relevant for the Referred Work.

Dŵr Cymru's views on comparators

12.16 In a letter dated 27 February 2007, Dŵr Cymru set out its views on how the *United Brands* test should be interpreted. Dŵr Cymru stated that the Authority should take into account at least eight factors (four are set out below and three in the following section) and that the Authority should consider factors that go beyond ascertaining the costs of the service required. In its information request to Dŵr Cymru (also of 27 February 2007), the Authority asked what comparators it considered the Authority should use to assess whether the FAP was an unfair price. In its letter of 20 March 2007, the Authority asked Dŵr Cymru to provide evidence concerning the comparators it suggested in its letter of 27 February 2007. Dŵr Cymru responded in a letter of 30 March 2007, amongst other observations, that it was the Authority's role to collect and review relevant evidence and that the burden of proof is on the party alleging an infringement to show that the first and second limbs of the *United Brands* test are satisfied. Dŵr Cymru also stated that the Authority has information gathering powers which Dŵr Cymru does not.

(1) A comparison of the FAP with the prices for non-potable supply charged to Dŵr Cymru customers both in 2001 and over time.

12.17 The first comparator Dŵr Cymru suggested for the FAP was Dŵr Cymru's non-potable prices to other customers in 2000-01 and over time. **Table 22** below presents information on the most relevant prices.

12.18 The first column shows the SBSA price which the Authority provisionally determined in 1996/97.

12.19 The second, third and fourth columns show Dŵr Cymru's large user tariffs. The partially-treated and raw water large-user tariffs were first introduced in 2003-04 which is why there are no earlier data for columns 2 and 3. The volumetric charge in the table has been calculated to be the volumetric equivalent of the fixed and volumetric charges a customer with Shotton Paper's demand would have paid on those tariffs.

12.20 The fifth, sixth, seventh and eighth columns set out the prices of customers on non-potable special agreements. The Authority has selected the four non-potable special agreements with the volumes closest to Shotton Paper's volume which were agreed after privatisation. Data on the prices of special agreements were not published before 2001-02. Also some of these agreements expired during the period covered by the table. As explained in the Authority's skeleton argument for the 2005 hearing, making a comparison between different bulk supply agreements is a difficult task because the agreements vary in what the price covers and in non-price terms (paragraph 81(1)). The Authority has chosen the closest comparators here.

Table 22 – Dŵr Cymru's prices to other customers 2000-01 to 2005-06

	1. SBSA Price	2. Dŵr Cymru partially treated tariff	3. Dŵr Cymru raw water tariff	4. Dŵr Cymru potable tariff	5. WSH NON POT9	6. WSH NON POT11	7. WSH NON POT12	8. WSH NON POT13
Year agreed	1999	2003	2003	2003	1994	1993	1995 &1999	2000
Volume (Ml/year)	6715	6715	6715	6715	4911	2829	2202	1710
Level of Treatment	Partial	Partial	Raw	Potable	Raw	Raw	Unknown	Unknown
2000-01	25.78	-	-	42.7	-	-	-	-
2001-02	25.98	-	-	44.1	26.65 #	29.55 $	27.28	21.97
2002-03	26.01	-	-	44.4	26.67 #	29.81 $	27.45	22.11
2003-04	26.19	25.5	21.6	45.7	26.85 #	-	27.92	22.49
2004-05	24.45 *	26.5	24.8	46.7	27.18 #	-	28.63	23.06
2005-06	25.24 *	29.6	25.5	55.2	27.99 #	-	-	-

Notes:
* = price after discount ordered by the Tribunal.
# = volumetric rate only, a reservation charge adds the equivalent of about 1p/m³.
$ = volumetric rate only, a reservation charge adds the equivalent of about 1.6p/m³.

12.21 The Authority considers that the non-potable tariff and the special agreements prices set out above are relevant comparators for the SBSA price. However, the Tribunal criticised the Authority's use of these non-potable prices in 1996/97 in the context of its analysis of ECPR on the basis that "*that approach seems at first sight to suffer from a problem of circularity, since if none of the other prices approximate to the prices which would be charged in a contestable market, those other prices would not be an appropriate benchmark for an ECPR calculation*" (paragraph 371 of the Interim Judgment).

12.22 However, the Authority notes that it is not the SBSA price which is at issue here (or in this case) but the FAP. In this respect, the Authority's view is that the above prices cannot be easily compared to the FAP other than by using, in this case, an AAC-plus model of all Dŵr Cymru's costs. This is because all the prices in the table above are effectively retail prices charged by Dŵr Cymru to large users. The FAP was an access price for access to the partial

treatment and transport facilities of the Ashgrove system. The Authority put this point to Dŵr Cymru in a letter of 20 March 2007. Dŵr Cymru replied on 30 March 2007 making the following points:

(a) Retail prices do not need to be adjusted to a high level of precision for the purposes of this assessment in order to be used as a comparator for access prices.

(b) It is likely to be most helpful to look at a wide variety of comparators, which may give a general sense of the economic value of the price offered, rather than merely to consider a small number of the closest comparators.

(c) Whilst there are important methodological differences between the derivation of the FAP and the derivation of retail prices for non-potable supply, Dŵr Cymru considers that the Authority is in a good position to be able to make informed adjustments to one or other price for the purposes of the second limb of *United Brands.*

(d) It is relevant to look not only at non-potable prices charged in 2001, but also at prices charged subsequently – say in the following 5 year period.

12.23 On points (a), (b) and (c) it would be possible to calculate rough access prices by taking the special agreement prices or the partially-treated water tariff and deducting the estimated cost of the water resource and any retailing costs. However, these estimates would be imprecise due to cost differences underlying the different retail prices and differences between the water resources costs that would be deducted. Given the difficulties encountered by all the parties in identifying the correct deduction from the SBSA price, to reach an appropriate access price and the degree of accuracy the Tribunal has indicated that it requires the Authority's view is that it would not be appropriate to derive comparator access prices by making rough adjustments to other retail prices Dŵr Cymru charges in this particular case.

12.24 Dŵr Cymru objected to the Authority's view above in letters of 16 May 2007 (second letter of that date) and 25 May 2007 (third letter of that date). Dŵr Cymru argued that "[*N]one of the reasons given by the Authority in the draft assessment are sufficient to invalidate the use of the comparators proposed by Dŵr Cymru or indeed to excuse the Authority from identifying other appropriate comparators*" (page 3). Referring to the Commission's decision in *Scandlines,* Dŵr Cymru commented that the requirements for compared products to be comparable "*do not however amount to a necessity for the comparators to match perfectly the situation being tested (either in terms of product/service or in terms of charging system). It is sufficient if they are of an order to allow a reasonable, and thus meaningful, comparison*" (page 3). Dŵr

Cymru also referred to the Tribunal's acceptance in *Napp v Director General of Fair Trading* (Case 1011/1/1/01) of the Director's use of a range of comparators as a reasonable method to establish excessive prices, notwithstanding that the comparators were imperfect.

12.25 The Authority accepts that the compared products do not have to be perfectly comparable to be of use in an excessive pricing test. However, the Authority still considers that calculating rough access prices from the special agreement prices or the partially-treated water tariff would be too imprecise for the reasons given above and given the degree of accuracy required by the Tribunal in this case.

12.26 In the Draft Assessment, the Authority noted that an alternative approach to calculating access price comparators would be to disaggregate the costs underlying Dŵr Cymru's other retail prices and add together the partial treatment and transportation costs underlying those retail prices along with any other relevant costs such as common carriage services. The Authority understands from Dŵr Cymru's submissions that it does not have detailed cost information on individual systems which could be used to calculate access prices for the four other non-potable systems in Table 21 above. However, Dŵr Cymru does have information available on the costs underlying all its tariffs in its AAC model. The Authority has conducted a detailed assessment of the partial treatment and transport costs associated with Dŵr Cymru generally through its AAC-plus methodology based on Dŵr Cymru's costs in 2000-01. This effectively compares the FAP to Dŵr Cymru's other retail prices.

12.27 Dŵr Cymru objected to the Authority using the AAC-plus methodology as a proxy for comparators in its third letter of 25 May 2007 on the basis that "*since that methodology is concerned solely with the first stage of the United Brands test; to use it again for the second stage would be an error of law; since it would render the second stage comparison meaningless*" (page 8). The Authority would like to clarify that it has not used the AAC-plus methodology as part of its assessment of the second stage of the *United Brands* test, but the Authority notes that the AAC-plus methodology might provide a more precise comparator than those comparators suggested by Dŵr Cymru.

12.28 With regard to (d), the Authority has looked at Dŵr Cymru's prices to other customers over time in **Table 22**. The Authority agrees that to assess the fairness of a price in the water industry, it is necessary to look at prices over time because of the long-term investments required by the industry. However, looking at Dŵr Cymru's retail prices over several years does not change the Authority's view that it would not be appropriate to derive comparator access prices by making rough adjustments to other Dŵr Cymru retail prices in this particular case.

(2) The prices indicatively proposed for common carriage access by other undertakers

12.29 The second comparator Dŵr Cymru suggested for the FAP was prices indicatively proposed for common carriage access by other undertakers. In Christopher Alun Jones' third witness statement (CAJ3) dated 10 May 2006, Mr Jones presented evidence on access prices proposed by other appointed water companies in 2002 pre-dating the WSL regime introduced by the Water Act 2003.

12.30 In MD177 *"Access Codes for Common Carriage",* 27 March 2002, the Authority required all appointed water companies to publish indicative access prices for common carriage. Most appointed water companies published sufficient information for the Authority to calculate indicative access charges for bulk transportation for large users. CAJ3 presented evidence on the access prices for transportation Shotton Paper would have paid in 2002-03. The Authority has recalculated those access prices itself, although the results are very similar to those presented in CAJ3. It should be recalled that the distribution element of the FAP offered by Dŵr Cymru in March 2001 was 16p/m^3.

Table 23 - Indicative access prices for bulk transportation of potable water in 2002

Company	Implied volumetric charge (p/m³)
Anglian (Lincoln) (Ruthamford) (Norfolk) (Fenland) (Suffolk)	 45.2 43.2 40.2 30.2 27.2
Folkestone	39.2
Dee Valley	37.6
Portsmouth	35.0
Sutton & East Surrey	33.5
Hartlepool	33.3
Bristol	32.9
Tendring Hundred	32.1
Three Valleys	32.0 #
Cambridge	30.5
Bournemouth	30.4
South East (southern) (northern)	 30.0 11.0
Mid Kent	20.9
Thames	19.3
Southern	19.0
Dŵr Cymru	16.2
Yorkshire	15.6
South West	6.6

Notes:
Northumbria and United Utilities used an ECPR methodology and did not give indicative access prices.
Severn Trent and Wessex's indicative access price methodologies were unclear.
Three Valleys' indicative access price includes local distribution costs.

12.31 In paragraph 107 of the third witness statement of Christopher Alun Jones, Mr Jones argues that Dŵr Cymru's indicative access price for bulk transportation of 16.3p/m³ (which the Authority calculates at 16.2p/m³), and by implication the 16p/m³ in the FAP, was low compared to the indicative access prices published by other appointed water companies in 2002.

12.32 There are several reasons why the 2002 indicative access prices are not easy to compare to the FAP. Although MD177 required all appointed water companies to publish indicative access prices for common carriage by 8 May 2002, the Authority had published MD183 "*Forum for Developing Common Carriage"* in 20 December 2002 explaining that the Government had announced a Water Bill

which included a new specific framework for common carriage and wholesale supplies (this eventually became the Water Act 2003). The water industry's work then turned to developing and implementing the WSL regime. As a result the 2002 indicative access prices were not challenged with respect to their cost-reflective basis by the Authority or new entrants.

12.33 Dŵr Cymru argues in its letter of 30 March 2007 that the FAP was never finalised or used in the same way as the 2002 indicative access prices never were. The Authority's view is that the contemporaneous evidence does suggest that there was uncertainty over the FAP's status. However, that does not alter the Authority's position that the 2002 indicative access prices were not challenged as to the extent to which they were cost reflective.

12.34 A second reason why the 2002 indicative access prices are not suitable comparators is that they relate to different appointed water companies. There are many legitimate reasons for cost differences between appointed water company regions and there is no direct read-across from costs or prices in one appointed company's area to another. It would involve detailed modelling to allow for differences between appointed water companies' non-potable costs underlying their access charges. In its letter of 30 March, Dŵr Cymru states that "*the different costs structures of different undertakers should not be a barrier to considering indicative access prices as a relevant comparator for the [FAP]*." However, the Authority's view is that the different cost structures invalidate these comparators (more detail on this point is given under (3) below) in this case.

12.35 Third, most of the 2002 indicative access prices relate to potable bulk supply distribution. In its letter of 30 March 2007, Dŵr Cymru conceded that *"[t]o the extent that some indicative access prices relate to potable water, it would be for the Authority to determine the extent to which, if at all, the comparison is invalidated in such instances*." Adjusting the 2002 indicative potable access prices to non-potable access prices would be a further complication making the comparison more difficult.

12.36 Given the three reasons set out above, the Authority's view in the Draft Assessment was that the 2002 indicative access prices cannot be easily compared to the FAP and that adjusting the indicative access prices would not produce reliable comparators.

12.37 Dŵr Cymru objected to the above conclusion in the Draft Assessment in a letter of 16 May 2007 on the basis that "*it would imply that no authority could ever carry out a comparison under the second [limb] of the United Brands test without first having tested whether the prices offered by each and every comparator could themselves be excessive and abusive. To take such a view would also imply that the comparative regime for competition in the water*

industry is considered by the Authority to be ineffective, which stands in stark contrast to the emphasis that the Authority has placed elsewhere on the use of comparators in the industry" (page 4).

12.38 The Authority does not accept Dŵr Cymru's points. First, the Authority is not saying that any possible comparator has to be tested itself for whether it is excessive or abusive before it can be used as a comparator. The Authority is instead pointing out that the 2002 indicative access prices were not used in practice, nor challenged by the Authority or new entrants with respect to their cost-reflective basis and are therefore less useful as comparators than prices actually offered and accepted in a competitive market.

12.39 Second, the Authority has explained that it would involve detailed modelling to allow for the differences between appointed water companies' non-potable costs underlying their access charges in this case. This point does not imply the Authority's comparative competition regime is ineffective as the Authority *has already* developed detailed econometric models over a number of years to compare appointed water companies' overall performance for regulatory purposes based on detailed regulatory returns (more detail is provided under (3) below).

12.40 Dŵr Cymru's letter of 16 May 2007 does not alter the Authority's view that the 2002 indicative access prices cannot be easily compared to the FAP and that adjusting the indicative access prices would not produce reliable comparators.

(3) The prices charged by other undertakers for non-potable supply

12.41 The third comparator Dŵr Cymru suggested in its letter of 27 February 2007 was the prices charged by other undertakers for non-potable supply. In its letter of 20 March, the Authority asked Dŵr Cymru to address the issue that those prices were retail prices rather than access prices and that the costs underlying those prices are likely to differ in other appointed water companies' areas. In its letter of 30 March 2007, Dŵr Cymru repeated its comments on comparators (1) and (2) above in relation to comparator (3) and suggested that the Authority, not Dŵr Cymru, has access to relevant information (and has the power to gather information) about prices charged by others. These comments are addressed below.

12.42 Apart from Dŵr Cymru, five other appointed water companies have tariffs for non-potable water. **Table 24** below sets out the volumetric price for non-potable water that a customer with Shotton Paper's demand would pay on the appropriate non-potable tariff.

Table 24 - Non-potable water tariffs, price for a customer with Shotton's demand in p/m^3

	Anglian (a)	Dee Valley (b)	Dŵr Cymru (c)	North-umbria (d)	Sutton & East Surrey (e)	United Utilities (f)
1997-98	29.5	39.5	-	-	53.6	18.5
1998-99	29.8	39.5	-	-	56.1	20.0
1999-00	29.3	40.1	-	-	-	23.0
2000-01	29.3	40.2	-	-	47.2	26.0
2001-02	30.3	41.0	-	13.5	51.2	26.9
2002-03	31.7	41.4	-	13.6	51.2	27.6
2003-04	34.7	42.9	25.5	14.0	51.7	30.5
2004-05	38.1	43.4	26.5	14.3	53.0	31.3
2005-06	45.0	48.4	29.6	15.4	62.0	32.4

Notes:

(a) **Anglian** - Streamline Industrial Plus Water Supply Tariff (non-potable only) in 1997/98 to 2000/01. From 2001/02 onwards New Industrial (Plus) non-potable water supply tariff. Based on fixed charge, maximum daily demand charge and volumetric charge.
(b) **Dee Valley** - Tariff for area formerly served by Wrexham Water Plc. Charges for untreated water. In 1997/98 Wrexham Water plc tariff. Fixed plus volumetric charge.
(c) **Dŵr Cymru** - Band 5 charge >1000 Ml/year. Fixed plus volumetric charge. Tariff is for partially-treated water. There is a separate (lower) tariff for raw water.
(d) **Northumbrian Water** – Partially treated water from the Teeside industrial raw water system. Fixed plus volumetric charge. The Teeside industrial raw water system was transferred to the appointed business on 1 April 2001. Before that charges were not published.
(e) **Sutton and East Surrey Water** - Non-potable (untreated) charges (one band only). Fixed plus volumetric charge. No non-potable charges in the charges scheme for 1999/00.
(f) **United Utilities** - Non-potable water (one band only). Fixed plus volumetric charge. North West Water for 1997/98 to 2000/01.

12.43 In 2000-01, the FAP was 23.2p/m^3 and the SBSA price was 25.78p/m^3. In that year, four companies had non-potable tariffs and the implied volumetric charges for a customer with Shotton Paper's demand were: Anglian 29.3p/m^3; Dee Valley 40.2 p/m^3; Sutton and East Surrey 47.2p/m^3; and United Utilities 26.0p/m^3. These charges show that the SBSA price was below what Shotton Paper would have paid under the standard tariffs in any of the four other appointed water company regions.

12.44 Dŵr Cymru suggested in its letter of 30 March 2007 that the Authority would have sufficient understanding from its regulatory work on the details of other undertakers' cost structures to form a view on whether an inferred "distribution and treatment" element of the prices would be closer to the FAP or to Albion's view. However, a straight read-across between water prices in different appointed water company areas cannot be made because there are many legitimate reasons for cost differences between

appointed water company regions (as mentioned under (2) above). As explained in the Authority's letters to the Tribunal of 20 February 2006 and 21 April 2006, the Authority carries out comparative efficiency analysis between the appointed water companies' potable water costs based on econometric models which allow for inherent cost differences between appointed water company's areas. A considerable amount of detailed information on potable water costs and explanatory factors (e.g. number and type of sources) is collected by the Authority through the June Returns to allow for this comparison to be made. The comparison is carried out at an aggregate level between appointed water companies and not for individual customers or discrete supply systems. Non-potable water is excluded from the Authority's comparative competition work to avoid distorting cost comparisons for the mainstream potable water supply service.

12.45 The Authority's view is that the non-potable tariff prices that Shotton Paper would have paid in other appointed companies' area cannot easily be used as comparators for the FAP as those prices cannot be easily adjusted for the relevant cost differences. The Authority's comparative efficiency models do not look at non-potable water, do not look at individual supply systems and compare efficiency rather than tariffs or access prices. The Authority therefore does not have an existing model which it could use to compare non-potable tariffs between appointed companies. It would be a very large exercise to collect the required non-potable information and to build a robust model to compare non-potable costs between water companies and of limited relevance for the Authority's current regulatory work in the light of the small amount of total revenues accounted for by non-potable water. Arguably, it would also be difficult to build a statistically robust regulatory model on the basis of company-wide information as there were only four other companies with non-potable tariffs in 2000-01. Further, the Authority does not consider that it would have been possible to undertake such an exercise within the timetable set by the Tribunal for the Referred Work, also taking account of the Authority's need to consult the parties in relation to the investigation. For these reasons, the Authority has not built a model to compare non-potable costs between water companies.

12.46 A second complication in comparing other companies' non-potable tariff prices with the FAP is that it would be a comparison of retail prices with an access price. What other companies' non-potable tariff prices were provides only limited information in respect of what access price they would have offered (in effect the tariff represents the ceiling on any plausible access price in most circumstances). It would be possible to estimate access prices from other companies' non-potable tariffs but these estimates would be imprecise for the reasons given under point (1) above.

12.47 Dŵr Cymru's points in its letters of 16 and 25 May 2007 regarding comparators are dealt with in Sections (1) and (2) above.

12.48 The Authority's view is that the non-potable tariff prices that Shotton Paper would have paid in other appointed water companies' area cannot be used as comparators for the FAP in this particular case as those prices cannot be adjusted for the relevant cost differences or for the fact that they are retail prices rather than access prices without great difficulty.

(4) The prices paid in the wider market for non-potable supply, including for private supplies and self supplies

12.49 In its letter of 20 March 2007, the Authority asked Dŵr Cymru to provide more detail on which private and self-supply prices would suggest wanted the Authority should look at and to provide any evidence it might have on such prices. Dŵr Cymru replied on 30 March 2007 that this was particularly an area where Dŵr Cymru would not have access to the relevant information and where the Authority has relevant information gathering powers. Dŵr Cymru suggested that the Authority should identify abstraction licences which might be susceptible to supplying a large non-potable customer and the Authority could then send appropriate questionnaires to the holders of the abstraction licences to obtain the relevant information.

12.50 The Authority has not investigated the prices paid in the wider market for non-potable supplies as suggested by Dŵr Cymru. This would be a large exercise and would provide information on retail prices for specific private and self-supply systems. Such prices would not be easily comparable with the FAP for (1) the reasons given above about retail prices not necessarily being good comparators for access prices; and (2) because the underlying costs of the private and self-supplies are likely to be different to the Ashgrove system.

12.51 Dŵr Cymru's points in its letters of 16 and 25 May 2007 regarding comparators are dealt with in Sections (1) and (2) above.

12.52 The Authority's view is that private and self-supply prices would not be meaningful comparators for the FAP in this particular case.

Conclusions on comparators

12.53 For the reasons set out above, the Authority concludes that no meaningful comparison can be drawn between the FAP and the comparators proposed by Albion and Dŵr Cymru in this particular case. Therefore there is insufficient evidence to conclude that the FAP is unfair by reference to comparators.

THE SECOND STAGE IN *UNITED BRANDS* (2): WHETHER THE PRICE IS UNFAIR IN ITSELF

12.54 In accordance with *United Brands*, the Authority has also investigated whether the FAP is "unfair in itself".

12.55 As set out in the summary of relevant law, there is scant guidance on how to determine whether a price must be considered unfair in itself. The Authority adopts the observations of the Commission at [217] to [218] of its decision in *Scandlines*:

> "*217. The case law of the Court of First Instance and the [ECJ] as well as the decisional practice of the Commission provides little guidance on how to determine whether a price must be considered unfair in itself.*
> *218. While the ECJ in United Brands stated that 'charging a price which is excessive because it has no reasonable relation to the economic value of the product supplied would be such an abuse, it provided no further details on how to determine this 'economic value' of the product/service provided*".

12.56 The "economic value" of the relevant services cannot be determined solely by a cost-plus approach. The assessment of the reasonable relation between the price and the economic value of the product/service must also take into account the relative weight of any non-cost related factors.

12.57 In *Scandlines*, the Commission did not exclude that the question whether a price is unfair may be assessed "*within a cost-plus framework*". However, "*in such an assessment, the economic value of the product/service cannot be determined simply by adding to the costs incurred in the provision of this product/service a profit margin which would be a pre-determined percentage of the production costs*" (at paragraph 221).

12.58 Rather, "*the economic value must be determined with regards to the particular circumstances of the case and take into account also non-cost related factors such as the demand for the product/service*" (paragraph 232).

12.59 More recently, the Court of Appeal in *Attheraces* has similarly excluded a simplistic costs-plus approach for determining whether a price is "unfair in itself" within the meaning of the second limb of the *United Brands* test. In that case, the Court of Appeal held that the first instance judge took too narrow a view of economic value in Article 82; in particular, he was wrong to reject the relevance of the value of the product to the purchaser in determining the value of the product (see paragraph 218 of the judgment).

12.60 However, in that case, it was material to the Court of Appeal's conclusion that the evidence and findings did not show the

purchaser's competitiveness to have been, or to be at risk of being, materially compromised by the price charged by the seller (paragraphs 211, 214, 215 and 217 of the judgment).

12.61 Neither *Scandlines* nor *Attheraces* addressed circumstances where non-cost related factors are considered as part of the assessment, but none found to exist. The Authority does not consider that either case excludes the possibility that the cost estimate of a product/service can, in the absence of other relevant non-cost related factors, represent its "economic value". The Authority also considers that neither case excludes the possibility that, in the absence of relevant non-cost related factors, the very excessiveness of a price could be sufficient to establish that the price bears no reasonable relation to the economic value of the product/service being provided.

12.62 In *Deutsche Post*, the Commission found the tariff charged by Deutsche Post bore no "*sufficient or reasonable relationship to the real costs or to the real value of the service provided*", having regard to the following: (i) adopting a cautious approach, the price exceeded the economic value of the service by at least 25%, and if an alternative benchmark were used, the price exceeded the economic value of the service by 43%; (ii) Deutsche Post was a monopolist and (iii) the peculiarities of postal services (at paragraphs [166] – [177]). Consequently, Deutsche Post's pricing was found to have exploited customers excessively and was therefore an unfair selling price within the meaning of Article 82. In that case, the Commission appears to have used the cost of providing the service as representative of its economic value.

12.63 In its letter of 16 May 2007, Dŵr Cymru submitted that the Authority was incorrect to consider that *Deutsche Post* is authority for the proposition that the cost of providing the service can be taken to represent the economic value of the service. The Authority does not derive from *Deutsche Post* any general proposition that, in all circumstances, one is entitled to take the cost of providing the service as representing the economic value of the service. In the light of *Scandlines* and *Attheraces*, such a proposition would plainly be wrong. The Authority must consider, as part of its assessment, whether there are any relevant non-cost related factors. However, the Authority considers that neither *Scandlines* nor *Attheraces* excludes the possibility that the cost may represent the economic value of the service if non-cost related factors are considered but found not to exist, and, that in appropriate circumstances, the price may be found to bear no reasonable relation to the economic value on the basis of the degree of excessiveness. In certain circumstances, the very excessiveness may show that the dominant undertaking is making use of the opportunities arising out of its dominant position in such a way as to reap trading benefits which it would not have reaped if there had been normal or

sufficiently effective competition, within the meaning of paragraph 249 of *United Brands*.

12.64 The Authority notes that on the particular facts of the case in *Deutsche Post* a price was held to be unfair when calculated to be 25% above the cost of providing the service in question. However, the Authority also notes that neither the case law of the ECJ nor the decisional practice of the Commission purports to indicate any quantitative threshold, akin to, for example, a *de limitis* threshold, above which an excess over costs is unfair in itself. The Authority considers that no single quantitative threshold would be appropriate, given the range of circumstances which could pertain to any case and the large margin of appreciation inherent in the concept of unfair pricing.

12.65 The Tribunal observed at paragraph 310 of the Main Judgment that the Second Issue involves a considerable margin of appreciation:

> *"Whether a given price bears "no reasonable relation" to its "economic value" is a matter of fact and degree, which in our judgment involves a considerable margin of appreciation, not least because the notion of the "economic value" and whether the price has a "reasonable" relation to that value are matters of judgment. It is particularly a matter of fact and degree to decide how far above "the economic value" a price has to be before it can be said to bear "no reasonable relation" to that economic value*".

12.66 The burden is on the regulatory decision maker to show that Dŵr Cymru has acted abusively and any doubt must be resolved in Dŵr Cymru's favour (*Scandlines,* paragraphs 243-244). The mere finding that a company holds a dominant position is not in itself a recrimination:

> "244. *An abuse must be established, ie that a dominant undertaking is engaged in exclusionary and/or exploitative practices. To this end, the burden of proof is on the Commission to demonstrate, based on cogent evidence, the existence of such an abuse. In this respect, the ECJ stated in United Brands that 'however unreliable the particulars supplied by [the dominant company]…, the fact remains that it is for the Commission to prove that [the dominant company] charged unfair prices'*".

12.67 In accordance with the approach mandated by the Commission and the Court of Appeal, the Authority has assessed the FAP within a cost-plus framework, taking specific account of the circumstances of the case and assessing whether there are any non-cost related factors, or "externalities" as they are referred to by the Court of Appeal in *Attheraces* (at paragraph 214).

Externalities which may affect the costs-plus approach

12.68 Dŵr Cymru has raised three factors which it considers relevant to this issue.

(1) The extent of the sunk costs (and any intangible value) of the Ashgrove system, which are not represented in the regulatory or management accounts

12.69 In its letter of 20 March 2007, the Authority asked Dŵr Cymru to clarify what type of sunk costs and intangible value of the Ashgrove system it was referring to and how they might be relevant to the assessment of whether the FAP was an unfair price. The Authority also asked Dŵr Cymru to provide any evidence of there being sunk costs (and any intangible value) of the Ashgrove system, which are not represented in the regulatory or management accounts.

12.70 Dŵr Cymru responded on 30 March 2007. Dŵr Cymru referred to the approach taken by the Commission in the *Scandlines* decision (paragraphs 208 to 233 and, in particular, paragraph 209). Dŵr Cymru referred to the Commission's argument that the economic value of the port services could not be measured solely by financial accounting information, for example because the port of Helsingborg had very high sunk costs that were not accounted for in the relevant financial reports and that therefore if the port were to be rebuilt from scratch or if a new ferry port was built in the same location the cost incurred to provide exactly the same level of services and facilities to the ferry operators would be far higher than the costs accounted for in the financial reports.

12.71 Dŵr Cymru argued that similar issues arose in the context of the Ashgrove system because, as Dŵr Cymru did not build the Ashgrove system, the economic value of the system is not reflected in Dŵr Cymru's financial records. Dŵr Cymru therefore submitted that the Authority should take account of the MEA cost of the Ashgrove system in assessing the economic value of the service received by Albion using Ashgrove under the second limb of the *United Brands* test (although Dŵr Cymru's primary submission remained that the costs of the Ashgrove system to be taken into account under the first limb of the *United Brands test* should be based on MEA values).

12.72 The Authority has sympathy with the Commission's point in *Scandlines* (paragraphs 221, 232 and 233) that in general the economic value of a product cannot simply be determined by adding a pre-determined profit margin to the costs incurred in providing that product. Using the MEA value of the Ashgrove system would appear to amount to carrying out another standalone cost calculation of the Ashgrove system, an approach which the Tribunal says "*in our view [has] little relevance to the determination of the issues in the present case*" (paragraph 573 of the Main

Judgment). Dŵr Cymru has not identified any other sunk costs or intangible value which appear plausible to the Authority.

12.73 The Authority accepts Dŵr Cymru's point in its letter of 16 May 2007 (page 6) that there are uncertainties in the three methodologies (AAC-plus, LAC and LRIC) the Authority is using in this Final Report. These uncertainties are addressed below.

(2) A comparison of the actual rate achieved on the service required with rates of return achieved in other similar industries across the UK

12.74 In its letter of 20 March 2007, the Authority asked Dŵr Cymru to specify more precisely what comparison it suggested the Authority should make in relation to rates of return. In its reply of 30 March 2007, Dŵr Cymru stated under point (6) that its primary submission was that in calculating the cost of the Ashgrove system under the first limb of the *United Brands* test, the Authority should allow a rate of return which is comparable to that which would be required commercially on a similar risk stand-alone project. Dŵr Cymru submitted that if the Authority did not adopt such an approach, but instead used the average regulated rate of return allowed for Dŵr Cymru across its entire asset base, the Authority must take account of the inherently riskier nature of providing the supply at Ashgrove on a stand alone basis under the second limb of the *United Brands* test.

12.75 The Authority also asked in its letter of 20 March 2007 what comparator rates of return Dŵr Cymru was referring to and asked Dŵr Cymru to provide evidence on those rates. Dŵr Cymru responded that its views on appropriate comparators for the rate of return were set out in the second witness statement of Christopher Alun Jones (CAJ2) at paragraphs 24-27. Those paragraphs set out Dŵr Cymru's thinking underlying its assumption of a 17.5% rate of return to be used in its calculation of the standalone costs of the Ashgrove system.

12.76 The main point CAJ2 makes is that the risk associated with building the Ashgrove system is relatively high because: there is no obvious alternative use for the Ashgrove system apart from supplying Corus and Shotton Paper; the parent companies of both sites have poor credit ratings; and normally an upfront capital contribution would be made for such a project, but this has not been allowed for here. CAJ2 goes on to point out that: Albion's own inset application implied a high rate of return (>450%); in the late 1990s Albion's parent group had a hurdle rate of 12% (post tax) for private water supply projects in the UK and abroad; in its Notice of Appeal (paragraph 205) Albion stated that its ultimate parent group in 2000/01, Pennon Group plc, required a post-tax return of at least 14% (equivalent to a pre-tax rate of return in excess of 20%); Dŵr Cymru had information from financial

institutions that the typical market rate of return on government-backed "private finance initiative" sewage treatment works was in the "early teens" ; and that Suez Environment reported that its rate of return on capital employed in its European Water business in 2004 was 17.7%.

12.77 In its letter of 16 May 2007, Dŵr Cymru objected to the Authority's use of Dŵr Cymru's regulated cost of capital in 2000/01 of 6.8% in the methodologies used in the Draft Assessment. Since the Draft Assessment, the Authority has decided to use an estimate of Dŵr Cymru's disaggregated cost of capital for serving industrial, non-potable customers rather than Dŵr Cymru's regulated cost of capital in 2000/01. The Authority has explained in Section 6B1 why it considers that in this case using an estimate of Dŵr Cymru's disaggregated cost of capital for serving industrial, non-potable customers is appropriate rather than the higher cost of capital proposed by Dŵr Cymru above. More details are given in Section 6B1.

(3) The effects of the framework of economic regulation within which Dŵr Cymru was operating at the time and the extent to which it was reasonable for it to use the same pricing framework for the FAP, on a regional average basis, that it used for pricing to other customers and (3a) the question of the social or economic desirability of regional average pricing

12.78 In response to Dŵr Cymru's points on regional averaging in its letter of 27 February 2007, the Authority replied on 20 March 2007 saying that regional averaging was a factor which the Authority would take into account when assessing whether the FAP was an unfair price within the meaning of the Chapter II prohibition.

12.79 At the time the FAP was offered in March 2001, the Authority's guidance on access pricing was contained in various MD letters. On 12 November 1999, in anticipation of the CA98 coming into force the Authority published MD154 called *"Development of common carriage"*. MD154 included a short section in the appendix on access pricing as follows:

> "*5. Access charges*
> *Deciding upon the charges for the shared use of the incumbent's network should be an integral part of each company's statement of principles. I expect each company to charge entrants as it would charge itself.*
>
> *It is important that access charges allow incumbents to recover reasonable network costs and capital maintenance charges, without over- or under-recovery. This might be on the basis of average costs, where appropriate, or long run marginal costs. Charges should be non-discriminatory. Distance-related charges may not*

be appropriate, unless the incumbent charges its own customers in this way" (emphasis added).

12.80 In MD163 *"Pricing issues for Common Carriage"* of 30 June 2000, the Authority commented at paragraph 6 that:

> "*As competition develops, companies may wish to bring their regional average tariff structures more closely into line with local costs. Should they choose to adjust their tariffs, companies would need to develop further their methods of cost allocation. Any de-averaging would also have to be consistent with the Director's duty to protect the interests of customers, particularly those in rural areas. In the electricity sector, for example, a standard price to some groups of customers, irrespective of where they live, has provided such protection. Moreover, de-averaging in electricity has been phased in order to minimise any potentially adverse impact.*"

12.81 Given the above statements from MD letters, it is clear that in March 2001, although the prospect of moving tariffs more towards local costs had been raised, the Authority envisaged that access prices could be set on regional average accounting costs. The Authority has not questioned Dŵr Cymru's use of an AAC methodology to calculate the FAP in the Decision or now. In the Decision the Authority found that Dŵr Cymru had made some cost misallocations and that the correct AAC access price in 2000/01 for the Ashgrove system should have been 19.2p/m^3.

12.82 The Tribunal has questioned the appropriateness of regional average charging for large non-potable users in Wales and the use of the AAC methodology at various points in its judgments (see in particular paragraphs 26-30 of the Main Judgment) although the Tribunal also stated "*[it] has not found that "it is unlawful to price on an averaged basis"…. What the Tribunal has found is that, if prices are arrived at on an average accounting cost basis, it should nonetheless be possible to verify the costs in question or at least identify the components of costs, at least on an estimated basis*" (paragraph 52 of the Further Judgment).

12.83 The three methodologies the Authority has used in the Final Report (AAC-plus, LAC and LRIC) are more disaggregating than the AAC methodology that is used in regulatory practice. In its letter of 16 May 2007, Dŵr Cymru stated that "[*T]he fact that the Authority has now – in 2007 – disaggregated the AAC methodology more than it has done in the past and than would be usual in regulatory practice and has used the LRIC and LAC models to examine the local costs is not a reason to reject the framework of economic regulation existing at the time the FAP was set as a factor in determining the economic value of the access services in 2001. The views of the*

specialist regulator at the time must plainly be relevant to the economic value attributable to the access services at that time" (pages 7-8). The Authority accepts this point but notes that in the Decision the Authority found that the correct AAC access price in 2000/01 for the Ashgrove system should have been 19.2p/m^3. As a result using a "pure" AAC approach rather than an "AAC-plus" approach might well have no practical effect in this particular case.

Other relevant factors

(1) The effect of the FAP on Albion's competitiveness/the relevance of the finding of a margin squeeze

12.84 In its letter of 16 May 2007, Albion distinguished *Attheraces* on the basis that, as noted above, it was material to the Court of Appeal's conclusion that the evidence and findings did not show the purchaser's competitiveness to have been, or to be at risk of being, materially compromised by the price charged by the seller (paragraphs 211, 214, 215 and 217 of the judgment). In contrast, submitted Albion, the FAP has been shown in this case to be compromising the ability of Albion to enter the market.

12.85 In this case, the Tribunal has found that Dŵr Cymru has abused its dominant position by imposing a margin squeeze on Albion, which has compromised Albion's competitiveness. The Authority notes that Dŵr Cymru has sought to appeal against the Tribunal's finding of a margin squeeze. At the time of issuing the Final Report, the Court of Appeal has refused on paper Dŵr Cymru leave to appeal and an oral hearing of Dŵr Cymru's application is listed for 26 July 2007. For the purposes of the Referred Work, in the current proceedings, the Authority assumes the correctness of the Tribunal's findings.

12.86 The Authority does not exclude the possibility that a margin squeeze could itself establish that an input price is unfair, in circumstances where the downstream retail price is not abusively low. However, the Authority is investigating pursuant to a referral under Rule 19(2)(j) in proceedings in which the Tribunal has stated that margin squeeze and excessive pricing may be related but they are not the same, paragraph 301 of the Further Judgment:

> "*…It seems to us that an unfairly high price and a margin squeeze are essentially quite different concepts. The former is an exploitative abuse, while the latter is an exclusionary abuse, aimed at eliminating competitors. It is not necessary, in our view, to prove the former in order to establish the latter. As Professor Armstrong emphasised on behalf of the Authority, the margin squeeze test is about the* difference *between the input price and the downstream price of the dominant supplier, not about the* absolute *level of either price*".

12.87 The Authority has therefore treated unfair pricing and margin squeeze as distinct concepts and has not taken into account the detriment to Albion's competitiveness arising from the abusive margin squeeze as relevant to the assessment of unfair pricing.

(2) The degree of excessiveness

12.88 The Authority has considered whether there are relevant non-cost related factors, or "externalities", in this case, and has concluded that there are none. For the reasons set out above, the Authority considers that neither *Scandlines* nor *Attheraces* excludes the possibility, in such circumstances, of the cost being found to represent the economic value of the service being provided.

12.89 The Authority also considers that, in the absence of any considerations apart from the excess over costs which are relevant and which can be taken into account as part of the assessment whether a price is unfair in itself, the excessiveness may in itself indicate that a price bears no reasonable relation to the economic value of the service being provided.

12.90 However, the fact that the FAP has already been found to be excessive does not establish, even in the absence of any non-cost related factors, that it is also unfair in itself. As set out above, under the first limb of the test, the Authority considered that the FAP is excessive on the basis that the excess of price over cost is material. The second limb of the test is discrete. In order for an excessive price to be unfair, it is not sufficient that the excess is material; it is necessary to go further and show that in the light of the excess, the price bears no reasonable relation to the economic value of the service provided.

12.91 The Authority notes in this regard that in *Deutsche Post*, an excess of 25% was found to be unfair. However, neither the case law of the ECJ nor the decisional practice of the Commission purports to indicate any quantitative threshold, akin to, for example, a *de limitis* threshold, above which an excess over the economic value of a product/service could be said to bear no reasonable relation to the economic value of the service provided. The Authority considers that no single quantitative threshold would be appropriate, given the range of circumstances which could pertain to any case and the large margin of appreciation inherent in the concept of unfair pricing.

12.92 In this case, the degree of excess has been calculated as 16%, 20% or 25% depending on the methodology used. As noted above, in practical terms, the percentage by which the FAP is above the costs reasonably attributable to the relevant services, means that Albion would have paid in the range of £207,000 to £304,000 per

year more than it would if the price were equal to the cost, based on a volume of water purchased of 6,468.5 Ml in 2000/2001[63].

12.93 The Authority considers it is possible that a degree of excess of 25% could show that the FAP is unfair of itself, so that Dŵr Cymru was making use of the opportunities arising out of its dominant position in such a way as to reap trading benefits which it would not have reaped if there had been normal or sufficiently effective competition, within the meaning of paragraph 249 of *United Brands*. However, an excess of 25% is the highest of the results produced by the three calculations used by the Authority. The Authority takes account of the fact that on the main AAC-plus methodology, the excess is 20%. It also notes that on the cross-check which produces the highest figure, namely LRIC, the excess is much lower at 16%.

12.94 The burden of proving that the FAP bears no reasonable relation to the economic value of the services provided is on the regulatory decision maker. As Dŵr Cymru correctly submitted in its letter of 25 May 2007, any doubt must benefit Dŵr Cymru, as the alleged infringer. In *Scandlines*, the Commission stated that "*the burden of the proof is on the Commission to demonstrate, based on cogent evidence, the existence of such an abuse*".

12.95 The Authority has already noted, in Section 4 above, that the Tribunal has stated that in a borderline, or finely balanced case the correct analysis is that the evidence is not sufficiently strong to establish an infringement[64]:

> *"200. In these circumstances, in applying the balance of probabilities in a case involving penalties, the Tribunal must be satisfied that the quality and weight of the evidence is sufficiently strong to overcome the presumption that the party in question has not engaged in unlawful conduct. For example, if in a borderline case the decision is finely balanced and the Tribunal finds itself to-ing and fro-ing, the correct analysis is that the evidence is not sufficiently strong to satisfy the Tribunal on the balance of probabilities that the infringement occurred*".

12.96 The Authority does not consider that an excess of 20%, as calculated under the main AAC-plus methodology, is indubitably unfair in itself, in the circumstances of this case, and having regard to the fact that on one cross-check methodology the excess is 16%.

12.97 As part of the assessment whether the degree of excess over costs is unfair in this case, the Authority notes that the Commission in *Scandlines* took into account the following factors as part of its rejection of a simple cost-plus analysis in that case:

[63] The Authority's Special Agreements Register.
[64] *JJB Sports plc v Office of Fair Trading* [2004] CAT 17 at paragraph 200.

12.97.1 First, there were uncertainties as regards the precise determination of the incurred costs. The assessment of the incurred costs by the Commission was based on an *approximate* cost allocation and the Commission proceeded on the basis of assumptions which naturally affected the level of the incurred costs (at paragraph 222). That is equally applicable in this case. The various uncertainties and assumptions involved in the cost allocation in this case are evident in the sections above.

12.97.2 Secondly, there was no information in that case on what a reasonable profit margin should be. There were insuperable difficulties in establishing valid benchmarks by reference to comparators (at paragraph 225). Again, that is applicable in the circumstances of this case. For the reasons set out in Section 10 above, the Authority considers that there are no meaningful comparators which establish a valid benchmark for a reasonable profit margin in this case.

12.98 The Authority recognises that there are uncertainties in its three methodologies. For example a case could be made that the Authority could have included a higher number for common costs, the back-up supply cost, common carriage service costs and sludge disposal costs in the FAP.

12.99 The Authority also takes account, in this case, of the fact that there is uncertainty (and disagreement between the parties) as to the precise scope of the services which Dŵr Cymru intended the FAP to cover and the fact that negotiations over the common carriage arrangement had not been completed by the time of the FAP and the Complaint. This is consistent with Dŵr Cymru's view that the FAP was indicative.

12.100 In the light of these factors, the Authority does not consider that, in the circumstances of this case, there is cogent evidence that the excess is on the balance of probabilities unfair in itself. The Authority accordingly concludes that there is insufficient evidence that the FAP bears no reasonable relation to the economic value of the service provided and so makes no finding that the FAP is unfair within the meaning of the test established in *United Brands.*

13. CONCLUSIONS ON THE SECOND ISSUE

13.1 The Authority has considered the issues that need to be taken into account when deciding whether the FAP is unfair within the meaning of the Chapter II prohibition.

13.2 As to the first limb of the test, the Authority has concluded that the FAP is excessive. The Authority considers that an excess of at least 16% is material, particularly having regard to the practical implications of that excess on the amount that would have been paid by Albion for the services in question.

13.3 As to the FAP being unfair by reference to comparators, the Authority's view is that the large number of material differences between the FAP and available comparators make it difficult for meaningful comparisons to be made with individual prices charged for the supply of water (whether potable or non-potable) by Dŵr Cymru or others.

13.4 As to the FAP being unfair in itself, there is very little guidance on what is meant by the concept of a price being "unfair in itself". The Authority has considered whether there are any relevant factors which affect the determination of the "economic value" of the relevant services in this case. The Authority's view is that there are no relevant non-cost related factors in this case. The Authority's view is that the costs reasonably attributable to the relevant services represent the "economic value" of those services, in accordance with the implicit approach of the Commission in its decision in *Deutsche Post*[65].

13.5 In the absence of any other relevant considerations, the Authority has considered whether the extent by which the FAP exceeds the costs reasonably attributable to the services establishes that the FAP bears no reasonable relation to the economic value of those services. As set out in the table above, on the basis of the Authority's calculations, the FAP exceeds the costs of providing the relevant services by between 16% and 25%.

13.6 The Authority considers that an excess of 25% could well indicate that the FAP is unfair in itself. However, an excess of 25% is the highest of the results produced the three calculations used by the Authority. The Authority takes account of the fact that on the main AAC-plus methodology, the excess is 20% and that on the cross-check which produces the highest figure, namely LRIC, the excess is lower at 16%.

[65] *AG – Interception of cross-border mail* OJ 2001 L331/40 (comparison of domestic and international tariffs where costs difficult to ascertain).

13.7 The burden of proving that the FAP bears no reasonable relation to the economic value of the services provided is on the regulatory decision maker. Any doubt must benefit Dŵr Cymru, as the alleged infringer. In accordance with the observations of the Tribunal set out in Section 12 above, if in a borderline case the decision is finely balanced, the correct analysis is that the evidence is not sufficiently strong to satisfy the Authority on the balance of probabilities that the infringement occurred.

13.8 The Authority does not consider that an excess of 20%, as calculated under the main AAC-plus methodology, is indubitably unfair in itself, in the circumstances of this case, and having regard to the fact that on one cross-check methodology the excess is 16%. At the time of quoting the FAP there was (and in fact there still remains) considerable uncertainty over the scope of the services to be provided by Dŵr Cymru for which the FAP was the consideration. The Authority has reviewed the contemporaneous evidence and sets out in Section 5 its assumptions underpinning the analysis of the FAP which are based on the view of the Authority as to the services that were required by Albion from Dŵr Cymru in this case, but notes that this is a retrospective assumption and there is little clarity on this issue.

13.9 Arguably the uncertainty regarding the scope of the services to be provided has been resolved to some extent in Dŵr Cymru's favour by *including* in the costs calculations of the FAP a large proportion of the disputed services[66], including the cost of a back-up supply. However, not all services have been included and uncertainty (and disagreement between the parties) on this issue remains. This is consistent with Dŵr Cymru's view that the FAP was indicative. The Authority has also borne in mind the complexity of the costs allocation and the inherent uncertainty of the assumptions involved; the lack of any benchmark for a reasonable profit margin in these circumstances and the fact that negotiations over the common carriage arrangement had not been completed by the time of the FAP.

13.10 In the light of these factors, the Authority does not consider that there is cogent evidence in the circumstances of this case that the excess is on the balance of probabilities unfair in itself. The Authority accordingly concludes that there is insufficient evidence that the FAP bears no reasonable relation to the economic value of the service provided and so makes no finding that the FAP is unfair within the meaning of the test established in *United Brands.*

[66] The dispute being one between the parties as to whether the costs of those services should be included in the FAP and what the costs of those services are should they be included in the FAP.

14. ANNEXES

CORRESPONDENCE PRIOR TO THE DRAFT ASSESSMENT

Annex A1	Letter from the Authority to Albion, United Utilities, the EA, Aquavitae and the Tribunal regarding the indicative timetable for the Referred Work.	5 February 2007
Annex A2	Letter from Albion with comments on the indicative timetable for the Referred Work.	7 February 2007
Annex A3	Letter from Dŵr Cymru with comments on the indicative timetable for the Referred Work.	8 February 2007
Annex A4	Letter from the Authority to Dŵr Cymru attaching a draft request for information in relation to the Referred Work.	12 February 2007
Annex A5	Letter from the Authority to Albion attaching a draft request for information in relation to the Referred Work.	12 February 2007
Annex A6	Letter from the Authority to United Utilities stating no information required in relation to the Referred Work.	12 February 2007
Annex A7	Letter from the Authority to Aquavitae stating no information required in relation to the Referred Work.	12 February 2007
Annex A8	Letter from Albion confirming attendance at the tri-partite meeting on 20 February 2007.	13 February 2007
Annex A9	Letter from Dŵr Cymru confirming attendance at the tri-partite meeting on 20 February 2007.	13 February 2007
Annex A10	Letter from the Authority to Albion acknowledging letter dated 13 February 2007.	13 February 2007
Annex A11	Letter from the Authority to Albion and Dŵr Cymru in response to their comments on the indicative timetable for the Referred Work.	15 February 2007
Annex A12	Letter from the Tribunal regarding administration of correspondence.	15 February 2007
Annex A13	Letter from the Authority to Albion and Dŵr Cymru regarding details of the tri-partite meeting on 20 February 2007.	15 February 2007

Annex A14	Letter from Albion regarding its comments on the draft requests for information.	16 February 2007
Annex A15	Letter from Dŵr Cymru regarding its comments on the draft request for information.	16 February 2007
Annex A16	Letter from the Authority to Dŵr Cymru and Albion confirming the tri-partite meeting on 20 February 2007.	16 February 2007
Annex A17	Letter from Dŵr Cymru to the Authority requesting an agenda for the tri-partite meeting on 20 February 2007.	19 February 2007
Annex A18	Letter from the Authority to Albion and Dŵr Cymru attaching the agenda for the tri-partite meeting on 20 February 2007.	19 February 2007
Annex A19	Letter from Albion to the Authority regarding observations on the tri-partite meeting on 20 February 2007.	26 February 2007
Annex A20	Letter from Dŵr Cymru to the Authority regarding its view on the FAP.	27 February 2007
Annex A21	Letter from the Authority to Dŵr Cymru and Albion attaching the final requests for information in relation to the Referred Work.	27 February 2007
Annex A22	Letter from the Authority to the Tribunal enclosing a copy of Annex 21.	28 February 2007
Annex A23	Letter from the Authority to Dŵr Cymru acknowledging its letter dated 27 February 2007.	1 March 2007
Annex A24	Letter from the Authority to Dŵr Cymru regarding the new tariff model.	2 March 2007
Annex A25	Letter from Dŵr Cymru to the Authority regarding the new tariff model.	2 March 2007
Annex A26	Letter from Dŵr Cymru to the Authority regarding further observations on the final requests for information.	2 March 2007
Annex A27	Letter from Aquavitae to the Authority regarding circulation of correspondence.	2 March 2007
Annex A28	Letter from Dŵr Cymru to the Authority regarding its first tranche of responses to final requests for information.	5 March 2007

Annex A29	Letter from Albion to the Authority seeking information on development of the new tariff model.	6 March 2007
Annex A30	Letter from the Tribunal to the Authority regarding the circulation of correspondence.	6 March 2007
Annex A31	Letter from Albion to Dŵr Cymru regarding question 2(e) of Dŵr Cymru's first tranche of responses to the final requests for information.	6 March 2007
Annex A32	Letter from Albion to the Authority seeking further disclosure of information on the development of the new tariff model.	6 March 2007
Annex A33	Letter from Dŵr Cymru to the Authority regarding disclosure of information on the development of the new tariff model.	8 March 2007
Annex A34	Letter from the Authority to Albion regarding disclosure of information on the development of the new tariff model.	8 March 2007
Annex A35	Letter from Aquavitae to the Authority regarding the disclosure of documents relating to interpretation of costs in relation to the Referred Work.	9 March 2007
Annex A36	Letter from Aquavitae to the Authority regarding the review of competition and disclosure of the methodologies.	9 March 2007
Annex A37	Letter from Dŵr Cymru to the Authority regarding its second tranche of responses to the final requests for information.	9 March 2007
Annex A38	Letter from Dŵr Cymru to the Authority with comments on the Authority's tariff model questions dated 2 March 2007.	9 March 2007
Annex A39	Letter from Albion to the Authority seeking further disclosure of information on development of the new tariff model.	9 March 2007
Annex A40	Letter from the Authority to Albion regarding its observations on the tri-partite meeting on 20 February 2007.	9 March 2007
Annex A41	Letter from the Authority to Dŵr Cymru acknowledging receipt of its letters dated 9 March 2007.	9 March 2007

Annex A42	Letter from the Authority to Aquavitae acknowledging receipt of its letter dated 9 March 2007.	9 March 2007
Annex A43	Letter from the Authority to Albion acknowledging receipt of its letter dated 9 March 2007.	12 March 2007
Annex A44	Letter from Albion to the Authority regarding its responses to the final requests for information.	12 March 2007
Annex A45	Letter from Albion to the Authority regarding its responses to Annex 2 of the final requests for information.	12 March 2007
Annex A46	Letter from the Authority to Dŵr Cymru responding to comments on the Authority's tariff model questions dated 2 March 2007.	12 March 2007
Annex A47	Letter from the Authority to Albion acknowledging its letters dated 12 March 2007.	14 March 2007
Annex A48	Letter from the Authority to Dŵr Cymru acknowledging its letter dated 5 March 2007.	14 March 2007
Annex A49	Letter from United Utilities to the Authority regarding the circulation of correspondence.	14 March 2007
Annex A50	Letter from Dŵr Cymru to the Authority in response to clarification issues from the Authority on 12 March 2007.	15 March 2007
Annex A51	Letter from the Authority to Dŵr Cymru acknowledging its letter dated 15 March 2007.	16 March 2007
Annex A52	Letter from the Authority to Aquavitae regarding the Referred Work and the review of competition in response to its letter dated 9 March 2007.	19 March 2007
Annex A53	Letter from Albion to the Authority regarding Albion's observations on Dŵr Cymru's responses to the final requests for information.	19 March 2007
Annex A54	Letter from the Authority to Dŵr Cymru requesting evidence on the FAP comparators.	20 March 2007
Annex A55	Letter from the Authority to Albion regarding the draft tariff model and its request for a further tri-partite meeting.	20 March 2007
Annex A56	Letter from Albion to the Authority regarding the draft tariff model and methodologies.	20 March 2007

Annex A57	Letter from Dŵr Cymru to the Authority regarding its third tranche of responses to the final requests for information.	26 March 2007
Annex A58	Letter from Dŵr Cymru to the Authority regarding its responses to the tariff model questions dated 2 March 2007.	26 March 2007
Annex A59	Letter from Albion to the Authority regarding costs of capital and requesting an early statement of the detailed methodologies.	27 March 2007
Annex A60	Letter from the Authority to Dŵr Cymru acknowledging receipt of its letters dated 26 March 2007.	27 March 2007
Annex A61	Letter from Dŵr Cymru to the Authority regarding the cost of capital and rates of return.	30 March 2007
Annex A62	Letter from Dŵr Cymru to the Authority regarding whether the FAP was an unfair price.	30 March 2007
Annex A63	Letter from the Authority to Dŵr Cymru regarding additional questions for Dŵr Cymru further to its written observations/responses dated 5 March 2007, 9 March 2007 and 15 March 2007.	30 March 2007
Annex A64	Letter from the Authority to Dŵr Cymru regarding WSHNONPOT8.	30 March 2007
Annex A65	Letter from the Authority to Albion regarding disclosure and methodologies.	3 April 2007
Annex A66	Letter from the Authority to Albion and Dŵr Cymru regarding the timetable for the draft assessment and the date set for a further tri-partite meeting.	3 April 2007
Annex A67	Letter from Dŵr Cymru to the Authority in response to the remaining additional questions further to its written observations/responses dated 5 March 2007, 9 March 2007 and 15 March 2007.	4 April 2007
Annex A68	Letter from Dŵr Cymru to the Authority in response to question 10 of the additional questions further to its written observations/responses dated 5 March 2007, 9 March 2007 and 15 March 2007.	4 April 2007
Annex A69	Letter from Dŵr Cymru to the Authority in response to question 4 of the Authority's information request dated 30 March 2007.	5 April 2007

Annex A70	Letter from the Authority to Dŵr Cymru acknowledging receipt of its letters dated 4 April 2007.	5 April 2007
Annex A71	Letter from Albion to the Authority confirming attendance at the tri-partite meeting and raising questions relating to the Draft Assessment.	5 April 2007
Annex A72	Letter from the Authority to Albion regarding aspects of the special agreement WSHNONPOT8.	5 April 2007
Annex A73	Letter from Albion to the Authority regarding WSHNONPOT8.	10 April 2007
Annex A74	Letter from Albion to the Authority attaching a letter to Dŵr Cymru regarding acquiring the Ashgrove System.	11 April 2007
Annex A75	Letter from Dŵr Cymru to the Authority in response to question 5 of the Authority's information request dated 30 March 2007.	13 April 2007
Annex A76	Letter from the Authority to Albion setting out the Authority's current thinking on the methodologies.	17 April 2007
Annex A77	Letter from Albion to the Authority regarding the methodologies.	18 April 2007
Annex A78	Letter from Albion to the Authority regarding the methodologies.	19 April 2007
Annex A79	Letter from Dŵr Cymru to the Authority regarding the methodologies.	20 April 2007
Annex A80	Letter from the Authority to Albion and Dŵr Cymru regarding the arrangements for the tri-partite meeting held on 18 May 2007.	20 April 2007
Annex A81	Letter from the Authority to Albion acknowledging its faxes dated 10 April 2007, 18 April 2007 and 19 April 2007.	20 April 2007
Annex A82	Letter from the Authority to Dŵr Cymru acknowledging its faxes dated 5 April 2007 and 13 April 2007.	20 April 2007
Annex A83	Letter from the Authority to Dŵr Cymru regarding the engineers' site visit and information requests.	25 April 2007

Annex A84	Letter from the Authority to Albion and Dŵr Cymru regarding the delay in timing of the Draft Assessment.	25 April 2007
Annex A85	Letter from Albion to the Authority regarding the delay in timing of the Draft Assessment, the engineers' site visit and Dŵr Cymru's letter dated 20 April 2007.	25 April 2007
Annex A86	Letter from the Authority to Dŵr Cymru acknowledging its letter dated 20 April 2007.	26 April 2007
Annex A87	Letter from Dŵr Cymru to Albion regarding Albion's attendance at the engineers' site visit.	27 April 2007
Annex A88	Letter from Albion to the Authority regarding confidentiality on the Draft Assessment.	27 April 2007
Annex A89	Letter from the Authority to Albion regarding circulation of the Draft Assessment.	27 April 2007
Annex A90	Letter from Dŵr Cymru to the Authority regarding a schematic of the Ashgrove site.	27 April 2007
Annex A91	Letter from Albion regarding Albion's and Dŵr Cymru's attendance at the engineers' site visit.	27 April 2007
Annex A92	Letter from the Authority to Albion and Dŵr Cymru regarding their attendance at the engineers' site visit.	30 April 2007
Annex A93	Letter from the Authority to Albion and Dŵr Cymru regarding the further delay in timing of the Draft Assessment.	30 April 2007
Annex A94	Letter from Albion to the Authority regarding the further delay in timing of the Draft Assessment and the engineers' terms of reference.	30 April 2007
Annex A95	Letter from the Authority enclosing the engineers' terms of reference.	1 May 2007
Annex A96	Letter from the Authority to Dŵr Cymru regarding the engineers' site visit.	2 May 2007
Annex A97	Letter from Dŵr Cymru to the Authority regarding the engineers' site visit.	2 May 2007
Annex A98	Letter from Albion to the Authority regarding its attendance at the engineers' site visit.	2 May 2007

CORRESPONDENCE AFTER THE DRAFT ASSESSMENT

Annex B1	Letter from the Authority to Albion and Dŵr Cymru attaching the Draft Assessment.	3 May 2007
Annex B2	Letter from Albion to the Authority regarding receipt of the Draft Assessment.	3 May 2007
Annex B3	Letter from Dŵr Cymru to the Authority regarding confidentiality in relation to the Draft Assessment.	3 May 2007
Annex B4	Letter from Albion to the Authority regarding comments on the demand assumptions on the LRIC forecasts in the Draft Assessment.	4 May 2007
Annex B5	Letter from Albion to the Authority regarding the LAC conclusions in the Draft Assessment.	4 May 2007
Annex B6	Letter from Albion to the Authority regarding the assumptions in the Draft Assessment.	8 May 2007
Annex B7	Letter from Albion to the Authority regarding housekeeping matters.	8 May 2007
Annex B8	Letter from the Authority to Dŵr Cymru regarding follow-up questions to the engineers' site visit.	10 May 2007
Annex B9	Letter from Dŵr Cymru to the Authority regarding its initial comments on the Draft Assessment.	11 May 2007
Annex B10	Letter from the Authority to Albion and Dŵr Cymru regarding reminding the parties about the tri-partite meeting held on 18 May 2007 (enclosing letter dated 20 April 2007).	11 May 2007
Annex B11	Letter from the Authority to Dŵr Cymru regarding the back-up supply.	14 May 2007
Annex B12	Letter from Dŵr Cymru to the Authority regarding the LRIC methodology.	14 May 2007
Annex B13	Letter from the Authority to Albion resending Annexes 10, 11 and 12.	15 May 2007
Annex B14	Letter from Dŵr Cymru to the Authority regarding Albion's letter dated 8 May 2007 and back-up supply.	15 May 2007
Annex B15	Letter from Albion to the Authority regarding section 4 of the Draft Assessment.	16 May 2007

Annex B16	Letter from Albion to the Authority enclosing copies of its letters dated 2 February 2007 and 12 February 2007 regarding bulk supply and WSHNONPOT8.	16 May 2007
Annex B17	Letter from Albion to the Authority regarding the tri-partite meeting held on 18 May 2007.	16 May 2007
Annex B18	Letter from Dŵr Cymru to the Authority regarding the tri-partite meeting held on 18 May 2007.	16 May 2007
Annex B19	Letter from Dŵr Cymru to the Authority regarding the *United Brands* test.	16 May 2007
Annex B20	Letter from Albion to the Authority regarding the tri-partite meeting held on 18 May 2007.	17 May 2007
Annex B21	Letter from Dŵr Cymru to the Authority regarding further comments on the Draft Assessment.	17 May 2007
Annex B22	Letter from Dŵr Cymru to the Authority regarding comments on Albion's letter dated 16 May 2007 regarding section 4 of the Draft Assessment.	17 May 2007
Annex B23	Letter from Dŵr Cymru to the Authority regarding the tri-partite meeting held on 18 May 2007.	17 May 2007
Annex B24	Letter from Dŵr Cymru to the Authority regarding excessive pricing.	17 May 2007
Annex B25	Letter from Albion to the Authority regarding the assumptions in the Draft Assessment.	21 May 2007
Annex B26	Letter from Albion to the Authority regarding the engineers' terms of reference.	21 May 2007
Annex B27	Letter from Albion to the Authority regarding additional information.	21 May 2007
Annex B28	Letter from Dŵr Cymru to the Authority regarding the transcript of the tri-partite meeting held on 18 May 2007 and enclosing the consent to discharge.	22 May 2007
Annex B29	Letter from Albion to the Authority regarding page 44 of the transcript of the tri-partite meeting held on 18 May 2007.	22 May 2007
Annex B30	Letter from Dŵr Cymru to the Authority regarding further comments on the tri-partite meeting held on 18 May 2007.	23 May 2007

Annex B31	Letter from Dŵr Cymru to the Authority regarding Albion's submissions in relation to the back-up supply at the tri-partite meeting held on 18 May 2007.	23 May 2007
Annex B32	Letter from Albion to the Authority regarding further comments on the Draft Assessment.	24 May 2007
Annex B33	Letter from Dŵr Cymru to the Authority regarding comments on the Draft Assessment.	25 May 2007
Annex B34	Letter from Dŵr Cymru to the Authority regarding Albion's comments on management and support costs in Albion's letter dated 24 May 2007.	25 May 2007
Annex B35	Letter from Dŵr Cymru to the Authority regarding the *United Brands* test.	25 May 2007
Annex B36	Letter from Dŵr Cymru to the Authority regarding comments on the Authority's letter dated 22 May 2007.	29 May 2007
Annex B37	Letter from Albion to the Authority regarding Dŵr Cymru's responses on the Draft Assessment.	30 May 2007
Annex B38	Letter from Albion to the Authority regarding amendments to the transcript of the tri-partite meeting held on 18 May 2007.	30 May 2007
Annex B39	Letter from Albion to the Authority requesting further information, including a copy of the engineers' report.	30 May 2007
Annex B40	Letter from Albion to the Authority regarding the analysis of the raw water and non-potable mains.	30 May 2007
Annex B41	Letter from the Authority to Albion regarding WSHNONPOT8.	30 May 2007
Annex B42	Letter from Dŵr Cymru to the Authority regarding Albion's letter dated 31 May 2007.	31 May 2007
Annex B43	Letter from Dŵr Cymru to the Authority regarding housekeeping matters.	31 May 2007
Annex B44	Letter from Dŵr Cymru to Albion requesting copies of Albion's letters dated 2 February 2007 and 12 February 2007.	31 May 2007

Annex B45	Letter from the Authority to Albion and Dŵr Cymru regarding an information request on various matters.	1 June 2007
Annex B46	Letter from Dŵr Cymru to the Authority regarding the Authority's information request dated 1 June 2007.	4 June 2007
Annex B47	Letter from the Authority to Albion and Dŵr Cymru enclosing the report by Europe Economics entitled *"Shotton Case – Appropriate Rate of Return for Industrial Non-Potable Water Supplies"*.	5 June 2007
Annex B48	Letter from the Authority to Albion and Dŵr Cymru enclosing the report by Mott MacDonald entitled *"Shotton Case – Engineering Assistance with Work Referred by the Competition Appeal Tribunal"*.	6 June 2007
Annex B49	Letter from Dŵr Cymru to the Authority regarding the sludge main.	6 June 2007
Annex B50	Letter from the Authority to Dŵr Cymru regarding a follow-up question on the back-up potable supply.	6 June 2007
Annex B51	Letter from Albion to the Authority regarding the engineers' report.	6 June 2007
Annex B52	Letter from the Authority to the Tribunal regarding housekeeping matters on the submission of the Final Assessment Report.	7 June 2007
Annex B53	Letter from Albion to the Authority regarding the draft common carriage arrangement.	7 June 2007
Annex B54	Letter from Albion to the Authority regarding the Authority's information request dated 1 June 2007.	7 June 2007
Annex B55	Letter from Albion to the Authority regarding the economists' report.	7 June 2007
Annex B56	Letter from Dŵr Cymru to the Authority regarding the Authority's information request dated 1 June 2007.	7 June 2007
Annex B57	Letter from Dŵr Cymru to the Authority regarding responses to questions 9 and 19 of the Authority's information request dated 1 June 2007.	7 June 2007

Annex B58	Letter from Albion to the Authority regarding Dŵr Cymru's response to the Authority's information request dated 1 June 2007.	7 June 2007
Annex B59	Letter from Albion to the Authority regarding distribution of the Final Report.	8 June 2007
Annex B60	Letter from Dŵr Cymru to the Authority regarding the economists' report.	8 June 2007
Annex B61	Letter from Albion to the Authority regarding the Court Farm system.	8 June 2007
Annex B62	Letter from Dŵr Cymru to the Authority regarding system S6.	8 June 2007
Annex B63	Letter from Dŵr Cymru to the Authority regarding the engineers' report.	11 June 2007
Annex B64	Letter from Albion to the Authority regarding Dŵr Cymru's comments on the economists' report.	12 June 2007
Annex B65	Letter from Dŵr Cymru to the Authority regarding the back-up supply.	12 June 2007
Annex B66	Letter from the Authority to Albion regarding the engineers' report and the cost of capital.	12 June 2007
Annex B67	Letter from the Authority to Dŵr Cymru regarding the back-up supply.	12 June 2007
Annex B68	Letter from Dŵr Cymru to the Authority regarding sludge volumes and the cost of capital.	13 June 2007
Annex B69	Letter from Dŵr Cymru to the Authority regarding the sludge sample.	13 June 2007
Annex B70	E-mail from Albion to Dŵr Cymru enclosing a letter from Albion to Dŵr Cymru regarding access to the AIS facility.	13 June 2007
Annex B71	Letter from Albion to the Authority regarding the engineers' report.	13 June 2007
Annex B72	Letter from Albion to the Authority regarding the sludge analysis.	13 June 2007
Annex B73	Letter from Albion to the Authority regarding the sludge analysis.	14 June 2007

Annex B74	E-mail from Albion to Dŵr Cymru regarding access to the AIS facility.	14 June 2007
Annex B75	Letter from Dŵr Cymru to Albion regarding access to the AIS facility.	14 June 2007
Annex B76	E-mail from Albion to Dŵr Cymru regarding access to the AIS facility.	14 June 2007

OTHER SUPPORTING MATERIALS AND OTHER CORRESPONDENCE

Annex C1	Authority document MD162 "*Common Carriage – Statement of Principles*".	12 April 2000
Annex C2	OFT 414a, "*Assessment of Conduct*", Draft Competition Law Guideline for Consultation.	April 2004
Annex C3	Commission "*Notice on the application of the Competition Rules to access agreements in the telecommunications sector*" (OJ C265/2).	22 August 1998
Annex C4	Authority document "*Access Codes for Common Carriage*" Guidance.	March 2002
Annex C5	Authority document "*Water Act 2003 Water Supply Licensing, Access Codes Guidance*".	September 2006
Annex C6	Authority document MD170 "*The Role of Long Run Marginal Costs in the Provision and Regulation of Water Services*".	8 May 2001
Annex C7	Authority document MD163 "*Pricing Issues for Common Carriage*".	30 June 2000
Annex C8	Extracts from Authority document "*Final Determinations: Future water and sewerage charges 2000-05*", (Section 10.3 and Appendix C).	25 November 1999
Annex C9	Extract from Authority document "*Regulatory Accounting Guideline 1.04*".	February 2007
Annex C10	Authority document "*Regulatory Accounting Guideline 4.03*".	February 2007
Annex C11	Authority document MD177 "*Access Codes for Common Carriage*".	27 March 2002
Annex C12	Authority document MD183 "*Forum for Developing Common Carriage*".	20 December 2002
Annex C13	Authority document MD154 "*Development of Common Carriage*".	12 November 1999
Annex C14	Letter from Dŵr Cymru to the Authority regarding Albion's common carriage application.	15 December 2000

Annex C15	Internal Authority e-mail from Huw Brooker to Susan Griffiths attaching minutes of a tri-partite meeting held on 16 January 2001 between Enviro-Logic, North West Water and Dŵr Cymru regarding the bulk supply at Heronbridge.	1 February 2001
Annex C16	Letter from Dŵr Cymru to the Authority regarding Albion's common carriage application.	2 February 2001
Annex C17	Letter from Dŵr Cymru to the Authority in response to questions dated 29 January 2001.	20 February 2001
Annex C18	Letter from Dŵr Cymru to North West Water regarding the tri-partite meeting held on 16 January 2001.	20 February 2001
Annex C19	Letter from the Authority to Dŵr Cymru regarding the indicative access price.	1 March 2001
Annex C20	Letter from the Authority to Enviro-Logic regarding Enviro-Logic's 1998 Act complaint against Dŵr Cymru.	1 March 2001
Annex C21	Letter from Dŵr Cymru to the Authority enclosing a copy of a letter sent from Dŵr Cymru to Enviro-Logic regarding the indicative access price.	2 March 2001
Annex C22	Letter from Enviro-Logic to the Authority regarding the indicative access price.	7 March 2001
Annex C23	Letter from Enviro-Logic to the Authority regarding Enviro-Logic's 1998 Act complaint against Dŵr Cymru.	8 March 2001
Annex C24	Letter from the Authority to Enviro-Logic regarding Enviro-Logic's 1998 Act complaint against Dŵr Cymru.	16 March 2001
Annex C25	Official transcript from the tri-partite meeting to discuss the Draft Assessment held on 18 May 2007.	18 May 2007
Annex C26	Note of meeting between Enviro-Logic and Dŵr Cymru.	10 November 2000

15. GLOSSARY

TERM	DEFINITION
Bulk Supply Price	The terms for the bulk supplies of potable and non-potable water to the Shotton paper site by Dŵr Cymru to Albion.
Common carriage customer services	Common carriage services, other than the physical transportation and partial treatment services, to be provided by Dŵr Cymru in relation to the provision of common carriage to Albion (for example, management of "unders and overs" account management and invoicing services).
First Access Price	The price of 23.2p/m³ offered by Dŵr Cymru to Albion on 2 March 2001 for the "common carriage" of non-potable water across the Ashgrove system.
First Bulk Supply Agreement	The Heads of Agreement between United Utilities and Dŵr Cymru dated 10 May 1994 under which Dŵr Cymru purchases a "bulk supply" of water from United Utilities for onward dale to Dŵr Cymru's customers via the Ashgrove system.
Non-potable water	Water which is not suitable for drinking.
Overs or over-supply	When the water inputted by Albion to the Ashgrove system would have been greater than Shotton Paper's requirement.
Partial treatment services	The water receives limited treatment by chemically assisted settlement.
Potable water	Water which has been fully treated and is suitable for drinking.
Raw water	Water which has not been treated at all.

The Referred Work	The referral back by the Tribunal under Rule 19(2)(j) of the Tribunal's Rules for further investigation the matter of the calculation of the costs reasonably attributable to the service of the transportation and partial treatment of water by Dŵr Cymru, generally and through the Ashgrove system in particular, together with the associated question of whether, in the light of those costs, the FAP was an unfair price within the meaning of the Chapter II prohibition.
Regional average charging	Charges based on the average costs of supplying all customers in each undertaker's Water Supply Area.
Second Bulk Supply Agreement	The bulk supply agreement between Dŵr Cymru and Albion dated 10 March 1999.
Standalone costs	The lowest cost which could be faced by a hypothetical supplier of only a particular product or service.
Unders or under-supply	When the water inputted by Albion to the Ashgrove system would have been insufficient to cover Shotton Paper's requirement.
Wholesale customer services	Services, other than the water resource, the physical transportation and partial treatment services provided by Dŵr Cymru in relation to the wholesale provision of non-potable water at the factory gate of Shotton Paper to Albion (for example, account management and invoicing services).
The Ashgrove system	The pipe which links the Heronbridge Abstraction Point to Shotton and Corus (Ashgrove Pipe) and the Ashgrove WTW.
The Costs Principle	Specific duties on water undertakers to allow common carriage and the type of costs that undertakers are allowed to recover under section 66E WIA91 in doing so.

ABBREVIATIONS

The 1998 Act	Competition Act 1998
AAC	Average Accounting Cost
Albion	Albion Water Limited
Anglian	Anglian Water
AOD	Above Ordnance Datum
Aquavitae	Aquavitae (UK) Limited
Ashgrove WTW	Ashgrove Water Treatment Works
The Authority	Water Services Regulation Authority (formerly the Director General of Water Services) (Ofwat)
Bretton WTW	Bretton Water Treatment Works
CCV	Current Cost Value
Chapter II prohibition	The prohibition on abuse of a dominant position set out in section 18 of the 1998 Act
Chester STW	Chester Sewerage Treatment Works
COD	Chemical Oxygen Demand
The Commission	European Commission
The Complaint	Albion's complaint on 8 March 2001 to the Director under the 1998 Act
Corus	Corus Colours Limited
Corus lagoons	The lagoon owned by Corus
The Decision	The Authority's Competition Act 1998 decision dated 26 May 2004 (CA98/01/2004)
Dŵr Cymru	Dŵr Cymru Cyfyngedig
EA	Environment Agency, Wales
ECJ	European Court of Justice
ECPR	Efficient Component Pricing Rule

Enviro-Logic	Enviro-Logic Ltd
FAP	First Access Price
FBSA	First Bulk Supply Agreement.
Further Judgment	The Tribunal's judgment dated 18 December 2006
Interim Judgment	The Tribunal's judgment dated 22 December 2006
Heronbridge	Heronbridge extraction point
IchE	Institute of Chemical Engineers
LAC	Local Accounting Cost
LRIC	Long Run Incremental Cost
LRMC	Long Run Marginal Cost
MAC	Modified Acquisition Cost
Main Judgment	The Tribunal's judgment dated 6 October 2006
MEA	Modern Equivalent Asset
MEAV	Modern Equivalent Asset Value
mg/l	Milligrams per litre
Ml/d	Megalitres per day
Refusal Judgment	The Tribunal's judgment dated 2 February 2007
RAG	Regulatory Accounting Guidelines
RCV	Regulated Capital Value
SBSA	Second Bulk Supply Agreement
Sealand	The Sealand Treatment Works
Shotton Paper	Shotton Paper Mill
The Tribunal	Competition Appeal Tribunal (CAT)
United Utilities	United Utilities Water plc
WIA 1991	Water Industry Act 1991

WSL Regime	Water Supply Licensing Regime
WTW	Water Treatment Works