2007 Price Control Review for ADSSC: Final Proposals

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Contents

Foreword

1. In September 2006, the Bureau commenced a consultation process to set the first price control for the Abu Dhabi Sewerage Services Company (ADSSC), a company recently established to provide sewerage services within the Emirate of Abu Dhabi, by publishing the First Consultation Paper.

2. Following the issuance of its Second Consultation Paper in February 2007, the Bureau published Draft Proposals in July 2007 setting out its initial proposals on the issues relating to the first price control. The Bureau has received a generally supportive response from ADSSC to the Draft Proposals.

3. This document sets out the Bureau's Final Proposals for the ADSSC's first price control, which is proposed to be a pure CPI-X revenue cap, with a control period starting retrospectively from the date of establishment of the company being 21 June 2005 and ending on 31 December 2009.

4. The Bureau intends to formally issue a modification to ADSSC's licence by 31 March 2008 to give effect to these Final Proposals. In parallel to the issue of these Final Proposals, the Bureau is therefore also issuing a draft of this licence modification to ADSSC for its review.

5. Written responses to the Final Proposals and the draft licence modification should be sent **by 28 February 2008** to:

Mark Clifton
Director of Economic Regulation
Regulation and Supervision Bureau
P.O. Box 32800
Abu Dhabi
Fax: (971-2) 642-4217
Email: mpclifton@rsb.gov.ae

6. The Bureau proposes to make responses to the consultation exercise publicly available.

NICK CARTER
DIRECTOR GENERAL
REGULATION AND SUPERVISION BUREAU

Executive summary

Introduction

1. As with other monopoly companies in the Abu Dhabi water and electricity sector, ADSSC is subject to price controls set by the Bureau to protect customers and derive operational efficiency. For ADSSC, the first price control is required to take effect retrospectively from the date of its establishment i.e., from 21 June 2005.

2. This document describes the Bureau's Final Proposals for the first price control for ADSSC taking into account the responses to the Draft Proposals issued by the Bureau in July 2007.

Form of control

3. The first price control for ADSSC will have the form of a CPI-X annual revenue cap, with the following features:

   (a) The price control will be a 'pure' revenue cap without involving any revenue driver.

   (b) The price control will run from 21 June 2005 to 31 December 2009.

   (c) A single control will cover all businesses of ADSSC.

   (d) A simple Performance Incentive Scheme (PIS) will accompany the price control, taking effect from 2008, to incentivise ADSSC to improve its performance on various aspects of its operation.

   (e) The maximum allowed revenue (MAR) for any year 't' of the control period shall be determined as follows:

$$\mathbf{MAR_t = a_t + Q_t - K_t}$$

   where:

   (i) a_t is a notified value (in UAE Dirhams or AED) for the year 't' as determined by the Bureau in 2005 prices through price control calculations and is indexed against UAE Consumer Price Index (CPI) less a "X" factor, where X has been set at zero;

(ii) Q_t is the total amount of incentives (in AED) for performance on Category A indicators under the PIS; and

(iii) K_t is the correction factor for an over- or under-recovery of MAR (in AED) in the preceding year.

Framework for price control calculations

4. A net present value (NPV) framework has been adopted to establish the level and profile of allowed revenue for ADSSC:

(a) The notified value 'a' is determined by equating the NPV of the forecast annual MARs to the NPV of the annual required revenues over the control period.

(b) The annual required revenue is calculated using the "building-block" approach as the sum of operating expenditure (opex), depreciation and return on capital.

(c) All calculations are carried out in 2005 prices and the cost of capital used to calculate the return on capital (discussed below) is used as the discount rate for NPV calculations.

Operating expenditure

5. A "top-down" approach has been used to set opex projections, as follows:

(a) Actual opex for 2005-2006 has been allowed for those years as per the draft accounts.

(b) Given the availability of only half-year accounts for 2007 and the recent increase in staff salaries and other allowances for ADWEA companies, opex for 2007 has been derived from 2006 opex by increasing annual staff costs by 20% (or, equivalently, by increasing half-year staff costs by 40%) and by increasing remaining costs by the 2006 UAE CPI inflation (i.e. 9.29%).

(c) For 2008-2009, the base opex (in 2007 prices) has been derived from 2006 opex by increasing staff costs by 40% and remaining costs by the 2006 UAE CPI inflation. Such base opex has then been adjusted for demand growth (0.75% opex increase for each 1% demand increase) and efficiency improvement (5% opex decrease per year in real terms).

6. The resulting opex projections in 2005 prices are shown in **Table 1**. While the opex projections for 2005-2007 are similar to those assumed in the Draft Proposals, for 2008-2009 they are higher than those assumed in the Draft Proposals by about AED 22-29 million per year, or by 8.6%-10.7%.

Capital expenditure

7. Given the lack of a reliable forecast of capital expenditure (capex) to be incurred during the control period, an ex post approach has been adopted for capex regulation. However, to facilitate the financing of capex and the smoothing of the price control from one period to another, provisional capex has been included in the first price control. It is important to note that the provisional capex figures are not indicative of the Bureau's views of the appropriate or efficient level of capex.

8. Once audited data on actual capex over the control period is available, it will be reviewed against the efficiency criteria established by the Bureau for the sector. That is, capex will be considered efficient if it:

   (a) was required to meet growth in customer demand or the relevant security and performance standards; and

   (b) was efficiently procured (procurement to be interpreted to include both the tendering process and project management).

9. Based on the efficiency review of actual capex, an appropriate adjustment will then be made to the regulatory asset value (RAV) at a future price control review for any difference between the efficient past capex and the provisional capex allowed at this review.

10. **Table 1** below shows the provisional capex allowances in 2005 prices (about AED 2.4 billion in total), which have been used in setting the price control in these Final Proposals.

Table 1: Opex and provisional capex - Final Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Opex projections	68.73	197.41	202.85	216.50	220.40
Provisional capex	379.01	128.25	412.76	600.00	900.00

Source: Bureau calculations
Notes: *The data for 2005 relates to 6-month period from 1 July to 31 December 2005.

11. These provisional capex allowances have been derived as follows:

(a) For 2005-2006, the provisional capex allowances are based on the actual levels reported by ADSSC in its draft audited accounts and are similar to those in the Draft Proposals.

(b) For 2007, the allowance is based on ADSSC's submission and remains the same as in the Draft Proposals.

(c) For 2008 and 2009, the provisional allowances have been increased from those in the Draft Proposals in consideration of ADSSC's argument for deteriorating asset conditions of the sewerage system and hence a requirement for increasing future capex. The revised allowances are about 50% higher (in real terms) than those for the immediately previous years (i.e. 2007 and 2008, respectively) and are higher by about 20% and 80% than the Draft Proposals for the respective years.

Financial issues

12. The audited accounting asset value as of 21 June 2005 has been used to set the initial RAV. For these Final Proposals, the Bureau has used the accounting asset value of AED 4,430.48 million as of 1 July 2005 as per ADSSC's draft accounts for 2005-2006 to set the initial RAV.

13. A straight-line depreciation approach has been used for the provisional capex with a weighted average asset life of 50 years. For the initial RAV, the depreciation has been set equal to the annual depreciation of AED 324.92 million (implying the remaining asset life of 13.6355 years) as per ADSSC's draft accounts for 2005-2006, in line with the Bureau's stated approach to match as closely as possible the actual outturn costs for 2005-2006.

14. Based on the Bureau's proposals on initial RAV, depreciation and provisional capex, the resulting opening and closing RAVs and depreciation for each year of the control period are presented in the following table:

Table 2: Projected RAVs over 2005-2009 – Final Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Opening RAV	4,430.48	4,643.24	4,437.70	4,511.27	4,761.94
Provisional capex	379.01	128.25	412.76	600.00	900.00
Depreciation on initial RAV	162.46	324.92	324.92	324.92	324.92
Depreciation on provisional capex	3.79	8.86	14.27	24.40	39.40
Closing RAV	4,643.24	4,437.70	4,511.27	4,761.94	5,297.62

Source: Bureau calculations
Notes: *The data for 2005 relates to 6-month period from 1 July to 31 December 2005.

15. The RAV increases from AED 4.4 billion in 2005 to AED 5.3 billion by end of 2009 (i.e., by about AED 867 million or 19.6%) in 2005 prices. The depreciation allowance is about AED 347 million per annum on average over the control period.

16. The Final Proposals use a real, post-tax cost of capital of 5.00% to calculate return on capital – the same as in the Draft Proposals and consistent with that used at the last price control review of water and electricity companies.

Price control calculations

17. The notified values 'a' and 'X' determined in these Draft Proposals are given in the following table:

Table 3: Notified values – Final Proposals

	X	'a' for 2005 (2005 prices)	'a' for 2006 onwards (2006 prices)
Notified value	0.00	AED 388.36 million	AED 824.84 million

Source: Bureau calculations

18. These notified values will be incorporated into the licence through the proposed licence modification being issued to ADSSC with these Final Proposals. For 2005, the notified value 'a' has been expressed in 2005 prices and is one-half of the value for subsequent years to reflect the 6-month period in 2005 after the establishment of ADSSC. For 2006 onwards, the notified value 'a' has been expressed in 2006 prices (and on a full-year basis) to allow operation of indexation mechanism in the licence whereby the notified value 'a' for subsequent years will be derived in nominal prices based on the actual UAE CPI.

19. The following table presents the projected MAR for ADSSC over the control period (2005-2009):

Table 4: Projected MAR over 2005-2009 – Final Proposals

AED million		2005*	2006	2007	2008	2009
Allowed revenue	(AEDm, 2005 prices)	388.36	776.72	776.72	776.72	776.72
Allowed revenue	(AEDm, nominal prices)	388.36	824.84	901.43	982.56	1,061.17

Source: Bureau calculations
Notes: *The data for 2005 relates to 6-month period from 1 July to 31 December 2005.

20. These estimates of annual MARs are higher by about AED 171 million per year in real terms (by about AED 181 to 233 million per year in nominal prices), or by 28%, than those estimated in the Draft Proposals for the respective years.

Performance Incentive Scheme

21. The PIS has two types of performance indicators:

 (a) Category A indicators with precise definitions, targets and incentive rates, and an automatic annual revenue adjustment for performance via a term "Q" in the MAR formula, subject to a cap of 4% of MAR; and

 (b) Category B indicators, which are less precisely defined but subject to a possible financial adjustment at the next price control review, depending on the performance over the control period, also subject to a 2% cap.

22. The PIS will take effect for the submissions due in 2008 onwards and will reward or penalize ADSSC through the Q term of the MAR formula two years after the year to which the submission relates.

23. The following table presents the Category A indicators and their targets and incentive rates:

Table 5: PIS Category A indicators – Final Proposals

Category A indicator	Target Date	Incentive Rate
1. Audited accounts timeliness	30 June each year	1.73 AED million / month
2. Audited PCR timeliness	31 March each year	1.73 AED million / month
3. AIS timeliness	30 September each year	1.73 AED million / month

24. Each incentive rate is expressed in terms of penalty amount per month of delay in submission of the relevant item. The bonus on submission of the item on or before the relevant target date will be six times the incentive rate i.e., AED 10.38 million per indicator. That is, the total bonus ADSSC can earn in any year can be as high as AED 31.14 million on Category A indicators.

25. The above incentive rate of AED 1.73 million per month is higher by AED 0.38 million per month or 28% than that in the Draft Proposals, due to higher estimated annual MARs in the Final Proposals.

26. The proposed Category B indicators are as follows:

 (a) performance of sewerage system (e.g., availability and reliability);

 (b) customer complaints (e.g., in relation to odour and flooding);

(c) performance against guaranteed service standards for customers;

(d) compliance with standards at treatment plants;

(e) meeting targets for recycling of treated effluent and biosolids;

(f) environmental performance;

(g) timeliness of annual preparation of five-year planning statement; and

(h) timeliness of interim profit and loss account.

Changes from Draft Proposals

27. The main differences between the Draft Proposals and the Final Proposals are summarised below:

Table 6: Summary of Main Differences from Draft Proposals

Main Feature	Draft Proposals	Final Proposals
Opex for 2005-2006	2005: AED 66.27 million 2006: AED 199.73 million	2005: AED 68.73 million 2006: AED 197.41 million revised as per draft accounts
Opex for 2007	AED 199.73 million	AED 202.85 million increased for recent increases in staff salaries and allowances for ADWEA companies and ADSSC's new staff requirements
Base Opex for 2008-2009	AED 199.73 million	AED 213.01 million increased for reasons mentioned above
Demand growth projections	Overall average 5.08% p.a.	Overall average in excess of 9% p.a. revised as per latest information
Provisional capex allowances	2006: AED 151.10 million 2008: AED 500 million 2009: AED 500 million	2006: AED 128.25 million revised as per draft accounts 2008: AED 600 million 2009: AED 900 million increased for deteriorating asset conditions
Asset life assumption for initial RAV	30 years	13.6355 years revised to match draft accounts

Notes: All AED amounts are in 2005 prices.

1. Introduction

The company

1.1 **Establishment:** Effective 21 June 2005, ADSSC was established by the Abu Dhabi Law No (17) of 2005 as a public joint stock company to provide sewerage services in the Emirate of Abu Dhabi. The company has taken over ownership, management and operations of the sewerage systems previously run by the Abu Dhabi and Al Ain Municipalities. The Abu Dhabi Water and Electricity Authority (ADWEA) presently wholly owns ADSSC and is responsible for the development of the Emirate's policies concerning the wastewater sector.

1.2 **Regulation:** Law No (17) of 2005 requires ADSSC to have a licence from the Bureau to undertake its activities. This Law also allows the company, after the Bureau's approval, to charge for providing sewerage services and connection to its sewerage system, and to sell treated wastewater effluent to the Department of Municipalities and Agriculture. ADSSC is also subject to the provisions of Law No (2) of 1998 concerning the regulation of the water and electricity sector in the Emirate of Abu Dhabi to the extent those provisions are not contradictory to Law No (17) of 2005.

1.3 **Licensing:** In accordance with the above requirements, the Bureau has issued a licence to ADSSC effective from 21 June 2005, which contains a number of conditions.

1.4 **Separate Businesses:** For various purposes, including for the purpose of accounting, ADSSC's licence defines three separate businesses: Sewerage Business, Wastewater Treatment Business, and Disposal Business, which are described in the First Consultation Paper.

The Regulator

1.5 **Regulated Activities:** Law No (2) of 1998 established the Bureau as the independent regulatory body for the water and electricity sector in the Emirate of Abu Dhabi and defines its duties, functions and powers. Law No (17) of 2005 extends these powers to include the wastewater sector. Any entity wishing to undertake any of the defined "regulated activities" in the Emirate requires authorization from the Bureau in the form of a licence (or a licence exemption). It is through the licence conditions (or conditions to an exemption) that the Bureau is able to influence the conduct of sector companies.

1.6 **Primary Duty:** The "primary duty" of the Bureau (Article 53 of Law No (2) of 1998) is "to ensure, so far as it is practicable for it to do so, the continued availability of potable water for human consumption and electricity for use in hospitals and centres for the disabled, aged and sick". As discussed in the First Consultation Paper, Law No (17) of 2005 may be interpreted as implying a corresponding primary duty in respect of the essential provision of sewerage services.

1.7 **General Duties:** The Bureau also has a number of "general duties" (Article 54 of Law No (2) of 1998), the most relevant of which in relation to this price control review is to "protect the interest of consumers ……… as to the terms and conditions and price of supply…".

1.8 **General Functions:** The Bureau also has a number of "general functions" (Article 55 of Law No (2) of 1998), including "the regulation of prices charged to consumers ……… and the methods by which they are charged."

1.9 **Accountability:** In carrying out its functions under the Law, the Bureau is under an obligation (Article 96 of Law No (2) of 1998) to act consistently, to minimise the regulatory burden on licensees, to take account of the financial position of licensees, and to give reasons for its decisions. Accountability is further reinforced by the fact that the Bureau's decisions can be challenged by licensees and ultimately made the subject of arbitration.

1.10 **Recent Amendments to Laws:** Recently, Law No (2) of 1998 and Law No (17) of 2005 have been amended via Law No (19) of 2007 and Law No (18) of 2007, respectively. Among other things, these amendments allow the Bureau to issue licences to sewerage companies other than ADSSC and require ADSSC to connect the networks and facilities of such companies to its network.

Need for price control

1.11 ADSSC is a monopoly being the only provider of sewerage services in the Emirate. It is therefore necessary to put in place a mechanism to protect the interests of the consumers of sewerage services both with regards to charges and to the quality of the service. The purpose of the price control is to cap revenue and provide incentives to improve service quality.

1.12 The costs of sewerage services are presently subsidised by the government. The price control, by capping ADSSC's revenue from any source, can therefore provide a mechanism to ensure the subsidy requirement of ADSSC reflects only reasonably efficient costs.

1.13 As discussed in Section 2 below, the Bureaus proposes to establish a simple price control for ADSSC which places a cap, in each year of the control, on the total revenue that ADSSC can recover from its customers and/or the government subsidy. This is similar to the price controls for network companies in the water and electricity sector, but without any 'revenue drivers' in the control (i.e., it is a price control with 100% fixed component).

Purpose and structure of this document

1.14 The purpose of this document is to conclude the consultation process with ADSSC and other stakeholders in the sewerage services sector to establish the first price control for ADSSC.

1.15 The remainder of this document is structured as follows:

(a) **Section 2** discusses the structure, scope and duration of the first price control for ADSSC;

(b) **Section 3** discusses the main inputs to the price control calculations for ADSSC;

(c) **Section 4** describes the price control calculations used in formulating Final Proposals, with these calculations presented in Annex A to this document; and

(d) **Section 5** discusses the Performance Incentive Scheme (PIS) for ADSSC in some detail.

Progress on this review

1.16 **Table 1.1** below sets out the progress to date and important dates for this price control review.

1.17 The publication of these Final Proposals (due by October 2007) was delayed partly due to unavailability of audited accounts of ADSSC and delay in the receipt of a complete response from ADSSC to the Draft Proposals. However, such delay period has been made useful by discussion between the Bureau and ADSSC on outstanding issues relating to the price control. The positive outcome on these issues has been achieved by the Bureau's proposed changes to the Draft Proposals via its letter of 18 October and ADSSC's indicated acceptance of these changes via its letter of 31 October. These Final Proposals are based on these proposed and accepted changes and hence are expected to be acceptable to ADSSC.

Table 1.1: 2007 price control review timetable (approximate dates)

Progress to date	
18 September 2006	Bureau published the ***First Consultation Paper***
7 November 2006	Bureau issued the First Information Request
13 November 2006	ADSSC responded to First Consultation Paper
21 December 2006	ADSSC responded to First Information Request
1 February 2007	Bureau published the ***Second Consultation Paper***
15 March 2007	ADSSC responded to Second Consultation Paper
29 March 2007	Bureau issued Second Information Request
5 June 2007	ADSSC responded to Second Information Request
11 July 2007	Bureau published the ***Draft Proposals***
20 July 2007	ADSSC submitted draft accounts
30 August 2007	ADSSC responded to Draft Proposals with required information to come later
6 September 2007	ADSSC submitted information referred in its 30 August response
16 September 2007	Meeting between ADSSC and Bureau to discuss ADSSC's response to Draft Proposals
23 September 2007	Meeting between ADSSC and Bureau to discuss progress
8 October 2007	ADSSC submitted revised opex data
18 October 2007	Bureau responded to ADSSC with proposed changes to Draft Proposals
31 October 2007	ADSSC responded to Bureau indicating acceptance of proposed changes to Draft Proposals
17 January 2008	Bureau publishes these ***Final Proposals***

1.18 The outstanding issues mentioned above were related to:

(a) opex projections;

(b) demand growth assumptions for opex projections;

(c) asset life assumptions for the calculation of depreciation; and

(d) capex projections.

1.19 These issues were raised by ADSSC in its response of 30 August 2007 to the Draft Proposals. The information supporting ADSSC's response on the above issues was submitted to the Bureau on 6 September. These issues were subsequently discussed between the Bureau and ADSSC on 16 and 23 September. Following these meetings, ADSSC submitted some revised data on opex on 8 October.

1.20 Having considered ADSSC's response and supporting information, the Bureau proposed on 18 October changes to certain aspects of the Draft Proposals to take account of each of the above issues. ADSSC's letter of 31 October indicated its acceptance of these changes.

1.21 These issues and how they have been dealt with are discussed in the relevant sections of this document later.

2. Form of control

Draft Proposals

2.1 In relation to the form of control, the Draft Proposals included the following proposals:

(a) adoption of the CPI-X type of regulation for ADSSC;

(b) adoption of a pure revenue cap without involving any revenue drivers;

(c) a control duration from 21 June 2005 up to 31 December 2009;

(d) a single price control covering all businesses of ADSSC; and

(e) introduction of a simple Performance Incentive Scheme (PIS) for ADSSC to take effect from 2008, with three Category A indicators, namely:

(i) timeliness of audited separate business accounts;

(ii) timeliness of audited Price Control Return (PCR); and

(iii) timeliness of Annual Information Submission (AIS) together with a Technical Assessor's report;

with an overall cap on total incentives for Category A to be equal to 4% of the annual MAR, whereas Category B to be subject to a cap of 2% of the MAR in any year in respect of adjustments made at the next review.

2.2 In view of the above, the Draft Proposals stated that the maximum allowed revenue (MAR) for any year 't' of the control period shall be determined as follows:

$$\mathbf{MAR_t = a_t + Q_t - K_t}$$

where:

(a) a_t is a fixed component (in AED) for the year 't';

(b) Q_t (for "Quality") is the total amount of incentives (in AED) for performance on PIS Category A indicators in year 't-2' (see discussion in Section 5 of this document); and

(c) K_t is the correction factor for any over- or under-recovery of MAR (in AED) during the preceding year 't-1', calculated as follows:

$$\mathbf{K_t = (AR_{t-1} - MAR_{t-1}) \times (1 + i_{t-1}/100)}$$

where:

(i) AR_{t-1} is the actual income from any source (for example, revenue from customers and government subsidy) received or to be received by ADSSC in respect of the year 't-1';

(ii) MAR_{t-1} is the actual MAR in respect of the year 't-1';

(iii) i_{t-1} is the average of the monthly average interest rates on annual inter-bank deposits during the year 't-1' as published by the UAE Central Bank.

2.3 A single notified value *'a'* is set by the Bureau in 2005 prices for each of the years of the control period (i.e., 2005 through 2009). For 2005, the notified value should be multiplied by 1/2 to reflect the 6-month duration in 2005 when the price control would be applicable. Further, for 2005, the notified value, being expressed in 2005 prices, will not be subject to any indexation against UAE Consumer Price Index (CPI) inflation. For the remaining years (i.e., 2006 through 2009), the value 'a' will automatically be adjusted each year according to the following formula for (i) the UAE CPI inflation for the previous year 't-1' and (ii) an 'X' factor set by the Bureau (zero as agreed in the Second Consultation Paper):

$$\mathbf{a_t = a_{t-1} \times (1 + (CPI_{t-1} - X) / 100))}$$

ADSSC's Response to the Draft Proposals

2.4 In its response of 30 August 2007, ADSSC accepted the Draft Proposals on the form of regulation as summarised above.

Final Proposals

2.5 In view of ADSSC's supportive response, the form of regulation suggested in Draft Proposals as set out above has been adopted in these Final Proposals.

3. Inputs to price control calculations

Introduction

3.1 This section discusses each of the following inputs required for the price control calculations presented in Section 4 of this document:

(a) opex projections;

(b) initial regulatory asset value (RAV);

(c) future capital expenditure (to determine RAVs for each year);

(d) depreciation assumptions - profile and average asset life; and

(e) cost of capital – the allowed rate of return on RAV and discount rate to calculate net present values (NPVs).

3.2 A number of issues were raised by ADSSC in its response of 30 August 2007 to the Draft Proposals in relation to the above inputs. These issues were extensively discussed between the Bureau and ADSSC during September and October in meetings and letters. Having considered ADSSC's response and supporting information, the Bureau proposed changes to certain aspects of the Draft Proposals in its letter of 18 October to take account of these issues. These changes were welcomed by ADSSC in its letter of 31 October. For these Final Proposals, the Bureau has adopted these discussed changes.

3.3 As many of the inputs used in these Final Proposals, such as the asset value, opex and depreciation for 2005-2006, are based on the draft accounts, the Bureau will review the audited accounts for these years when available and make any necessary financial adjustments at the next price control review for ADSSC.

3.4 To convert nominal prices into 2005 prices or vice versa in this paper, the Bureau has used the following UAE CPI inflation:

Table 3.1: UAE CPI Inflation

		2004	2005	2006	2007	2008
UAE CPI	(base year 2000)	114.00	121.70	133.00	144.97	156.57
UAE CPI inflation	%		6.20%	9.29%	9.00%	8.00%

Source: UAE Ministry of Economy and Planning for 2004-2006. Bureau's assumptions for 2007-2008.

Opex projections

Draft Proposals

3.5 For the Draft Proposals, the Bureau adopted the following top-down approach for projecting future opex:

(a) determine a base level of opex by using the recent actual level of opex;

(b) adjust the base level of opex to reflect increased opex arising from future demand increases (0.75% increase in opex for each 1% increase in demand);

(c) adjust the demand-adjusted opex for efficiency improvement expected over the control period (5% decrease in opex per year in real terms); and

(d) make further adjustments to opex projections which may be appropriate; for example, for one-off costs (or cost reductions) which were not observed in the past but are known about in advance for the future.

3.6 Based on the above approach, the opex projections for the Draft Proposals (shown in **Table 3.2** below) were derived as follows:

Table 3.2: Opex projections for Draft Proposals

Opex in AED million, 2005 prices		**2005***	**2006**	**2007**	**2008**	**2009**
Base opex	**(AEDm)**	**66.27**	**199.73**	**199.73**		
Number of customers	(customers)	216,642	224,923	230,994	237,229	243,632
Annual increase	(%)		3.82%	2.70%	2.70%	2.70%
Average daily flow	(m3/day)	436,322	482,099	534,346	592,256	656,441
Annual increase	(%)		10.49%	10.84%	10.84%	10.84%
Average demand growth	(%)		7.16%	6.77%	6.77%	6.77%
Adjustment for demand growth	(%)				5.08%	5.08%
Adjustment for efficiency improvement	(%)				-5.00%	-5.00%
Opex allowance	**(AEDm)**	**66.27**	**199.73**	**199.73**	**199.38**	**199.02**

Source: Bureau calculations

Notes: For 2005, opex is only for 6 months from 1 July to 31 December 2005.

(a) For 2005 and 2006, actual opex as per ADSSC's unaudited trial balances were allowed.

(b) For 2007, pending actual data for 2007, opex was assumed to be at the same level as 2006 in real terms.

(c) For 2008 and 2009, the average opex for 2006 and 2007 and the opex projection for 2008 were used as the base levels, respectively. These base levels were then adjusted for demand growth and efficiency improvement as discussed above.

(d) Demand growth was measured in terms of number of customers and average daily flow. The average annual growth in these demand measures (5.08%) was used for the adjustment to opex.

ADSSC's Response to Draft Proposals

3.7 In its responses of 30 August, 6 September, 23 September and 8 October 2007 to the Draft Proposals, ADSSC raised a number of issues in relation to the opex projections. ADSSC's submissions on these issues are summarised below along with the Bureau's assessments:

Population growth

3.8 Population per se is not an input to the price control calculations, and was not discussed in the Draft Proposals. However population growth had been under discussion in connection with ADSSC's arguments, put forward in its letter of 6 September 2007, for higher average daily flow projections (which <u>are</u> an input to the price control calculations, via the future opex projections). It is in this context that population growth is discussed below.

3.9 ADSSC submitted that historical population growth over 1995-2003 was 6.8% per annum for the UAE and 8.5% per annum for the Emirate of Abu Dhabi. For the future, while ADSSC's letter of 6 September suggested a population growth of 10% per annum, ADSSC's letter of 23 September provided the population projections for the Emirate of Abu Dhabi of its master plan consultants showing an average annual growth rate of 15.7% over 2007-2010.

3.10 The Bureau has not been able to verify the historical population growth of 8.5% quoted by ADSSC and prefers to rely on the data presently published on the UAE Ministry of Economy website, which shows an annual population growth for the Emirate of Abu Dhabi of 4.03% over 1995-2005.

3.11 ADSSC's latest future population growth estimate of 15.7% is inconsistent with ADSSC's earlier submission for 10% growth and with other sources predicting population growth of 7% or less[1]. ADSSC's population projections clearly seem over-optimistic (or perhaps out-of-date). Recently, the Urban Planning Council of the Executive Affairs Authority of Abu Dhabi has published forecasts of population growth for Abu Dhabi island and surrounding areas (including the new developments adjacent to Abu Dhabi island). These imply ("Plan Abu Dhabi 2030", page 46)[2] average annual growth of 5.74% over the period 2007 – 2013.

3.12 Population growth significantly lower than 10% per annum is also supported by the latest Annual Information Submissions of AADC and ADDC. These indicate growth in customer numbers of about 6% per annum for 2007-2009 (see below for further details). Nevertheless, it seems reasonable to assume that population growth may be somewhat higher in the near future than in the recent past, and this is reflected in the Bureau's revised demand growth assumptions for the price control, discussed below. ADSSC in its letter of 31 October 2007 accepted in principle the Bureau's revised position on future population growth.

Average daily flows

3.13 The Draft Proposals assumed a growth rate of 10.84% for the average daily flows over 2007-2009, based on the actual historical growth in average daily flows in the Emirate of Abu Dhabi over 2004-2006. In its letter of 6 September, ADSSC expressed its belief that a 15% annual flow increase is reasonable and pragmatic for the future. In response to the Bureau's query, ADSSC through its letter of 23 September submitted (a) actual flows at Mafraq treatment plant during the period March-August 2007, showing a 14% increase over a six month period and (b) the flow projections of the consultants for its master plan showing a flow increase of 12.9% over 2007-2010.

3.14 With regard to the Mafraq data, the Bureau's assessment is that this is not presented for a continuous 12 month period, and will be subject to seasonality factors over the summer period for which data has been submitted. It therefore does not provide much assistance in assessing potential future <u>annual</u> growth rates. Further, it is for a single location and

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[1] For example, see the articles at the following URLs: www.menareport.com/en/business/213843 and www.ameninfo.com/107745.html.

[2] "Plan Abu Dhabi 2030 – Urban Structure Framework Plan" is available on the website www.abudhabi.ae.

ADSSC does not explain how it may relate to flow growth for the Emirate as a whole.

3.15 In the case of the consultant's master plan, the Bureau has not been able to verify the 12.9% growth from the consultant's projections. Further, it is not clear why this figure differs from the 15% growth estimated in ADSSC's letter of 6 September.

3.16 While the Bureau understands the expectation of a higher growth in wastewater flows in the Emirate in the near future, it has not been provided with conclusive evidence for a specific growth rate and for a specific relationship between population and flows. Nevertheless, if population is expected to grow faster in the future than in the past, then it may be reasonable to assume that daily flows may also grow at a faster rate than previously. The Bureau has therefore modified the Draft Proposals in relation to the future average daily flows by assuming a growth rate equal to the average of (a) the historical growth as used in the Draft Proposals (i.e. 10.84%) and (b) the growth argued for by ADSSC (i.e. 15%). The resulting growth rate is 12.92% p.a., similar to the growth figures projected by ADSSC's consultants, and the resulting flow projections are shown in **Table 3.3** below.

3.17 In its letter of 31 October 2007, ADSSC accepted in principle the Bureau's arguments and proposed revised growth assumption for average daily flows.

Customer number projections

3.18 While ADSSC has not raised any concern explicitly in relation to the Bureau's customer number projections in the Draft Proposals, the Bureau understands that the population growth issue discussed above is related to these projections. In the Draft Proposals, the future growth in customer numbers (about 3% p.a.) has been based on the historical growth reported by ADDC and AADC over 2003-2006. Following the Draft Proposals, the Bureau has received the 2007 Annual Information Submissions (AIS) from AADC and ADDC, along with the report of the independent Technical Assessor (PB Power). These submissions include customer number projections, summarized in **Table 3.3** below, showing a compound average annual growth of 5.4% p.a. over 2005-2009, similar to the population growth expected by the Executive Affairs Authority. For these Final Proposals, the Bureau has adopted these projections for its methodology for opex projections for ADSSC's price controls.

3.19 The revised demand projections, including the average of the growth in customer numbers and in daily flows, which is used as an input into the opex projections, are shown in **Table 3.3** below. They result in an overall demand growth assumption (final row) in excess of 9% p.a., compared to 6.77% assumed in the Draft Proposals.

Table 3.3: Bureau's demand projections for Final Proposals

		2005	2006	2007	2008	2009
Number of customers	(customers)	216,642	224,923	238,048	251,650	267,173
Annual increase	(%)		3.82%	5.84%	5.71%	6.17%
Average daily flow	(m3/day)	436,322	482,099	544,380	614,707	694,119
Annual increase	(%)		10.49%	12.92%	12.92%	12.92%
Average demand growth	**(%)**		**7.16%**	**9.38%**	**9.32%**	**9.54%**

Notes: Source: AADC and ADDC's 2007 AIS submissions, ADSSC's historical data on flows, Bureau calculations.

3.20 ADSSC's letter of 31 October 2007 stated that it was content to rely on the customer number information from AADC and ADDC at present.

ADSSC's opex submissions

3.21 **Table 3.4** below shows ADSSC's actual opex for 2005, 2006 and the first half of 2007 as per the draft accounts for 2005-2006 (ADSSC's letter of 20 July 2007) and trial balances for 2005-2007 (ADSSC's letter of 6 September 2007):

Table 3.4: ADSSC's actual opex for 2005-2007

AED million, nominal prices	2005(HY)	2006	2005-2006	2007 (HY)
Staff costs	29.16	58.96	88.12	41.93
O&M costs (incl. chemicals and utilities)	37.12	127.37	164.50	47.45
Administrative expenses (incl. vehicles)	2.45	23.31	25.76	7.47
Total opex	**68.73**	**209.64**	**278.37**	**96.85**

Source: ADSSC's letters of 20 July 2007 and 6 September 2007.
Notes: "HY" stands for Half Year; for 2005, from 1 July to 31 December; for 2007, from 1 January to 30 June.

3.22 It seems that the above opex submitted by ADSSC for the first half of 2007 may not include some costs, such as utilities. The Bureau has requested – but not yet received – an Interim Profit and Loss Account from ADSSC for the first six months of 2007. It may also be noted that the opex for the second half of 2007 is likely to be higher than the first six months of 2007 due to recent increases (effective from 1 July 2007) in staff salaries (understood to be of the order of 40 per cent) and accommodation allowances in ADWEA group of companies.

3.23 In its response to the Draft Proposals, ADSSC submitted the following opex projections for 2006-2009 through its letter of 6 September 2007:

Table 3.5: ADSSC's opex projections for 2006-2009

AED million, nominal prices	2006	2007	2008	2009
O&M contracts	168.00	180.00	195.00	
Staff costs	35.00	17.00	48.00	
Staff salaries	88.00	81.00	110.00	
Vehicles, utilities and office expenses	46.00	52.00	76.00	
Administrative expenses	55.00	40.00	41.00	
Total opex	**392.00**	**370.00**	**470.00**	**470.00**

Source: ADSSC's letter of 6 September 2007.

3.24 These projections were discussed in the meeting between ADSSC and the Bureau held on 16 September, where the Bureau raised serious concerns about their validity, for example:

(a) Opex for 2006 is stated to be AED 392 million, whereas the Bureau understood the correct figure from previous submissions to be AED 209.64 million (see **Table 3.4**). Some/all of the "2006" data appears to relate to the 18 month period 2005-2006 but is much higher (by 41%) even than the costs previously submitted for that period.

(b) The data included at least two significant double counting errors that we have been able to identify. First, "staff costs" which were shown as a separate item (AED 35 million) were already included in the item "staff salaries" (of AED 88 million); second, "vehicle, utilities and office expenses" (AED 46 million) which were added separately to opex were already included in "administrative expenses" of AED 55 million.

(c) Opex projections for 2007-2009, being derived from an incorrect 2006 base, therefore seem clearly over-stated.

3.25 At the meeting on 16 September ADSSC could not answer the various questions raised by the Bureau about these figures. ADSSC agreed to submit revised projections, which it did via its letter of 8 October, as follows:

Table 3.6: ADSSC's opex projections for 2005-2008

AED million, nominal prices	2005(HY)	2006	2007	2008
Staff costs	29.16	58.76	125.05	80.00
O&M costs (incl. utilities)	37.12	131.06	126.14	227.00
Administrative expenses (incl. vehicles)	2.45	11.35	79.31	31.00
Total opex	**68.73**	**201.17**	**330.50**	**338.00**

Source: ADSSC's letter of 8 October 2007.

Notes: "HY" stands for Half Year; for 2005, from 1 July to 31 December.

3.26 Although lower than ADSSC's previous estimates, the Bureau communicated serious concerns about the above opex projections:

(a) 2006 opex still differs from that contained in earlier submissions (by about AED 8 million).

(b) There are large variations in future opex projections from year to year which cast doubt on their robustness. For example:

(i) Staff costs increase from AED 59 million in 2006 to AED 125 million in 2007 and then fall to AED 80 million in 2008.

(ii) O&M costs (including utilities) almost double from 2007 to 2008, without explanation.

(iii) Administrative expenses (including vehicles) rise seven-fold between 2006 and 2007, then halve between 2007 and 2008.

(iv) Opex implied for the second half of 2007 (AEDm 233.65 i.e. AEDm 330.5 for 2007 full-year less AEDm 96.85 for first half of 2007 as per **Table 3.4**) is more than double that for the first half of 2007.

(c) There is no explanation or documentation supporting these projections and the movements in costs from year to year, as requested by the Bureau at the 16 September meeting.

3.27 The Bureau has therefore been unable to use the opex projections provided by ADSSC to inform its estimates of opex for 2007 – 2009.

Final Proposals

3.28 While the Bureau is not satisfied by ADSSC's opex submissions to date, it recognises the need to address some concerns such as higher staff costs and the effect of demand growth. The Bureau has therefore modified its opex projections for these Final Proposals, as discussed below:

Base opex level

3.29 As mentioned above, the Bureau has not yet received reliable data for the first six months of 2007 from ADSSC. Thus, assuming the 2006 opex (AED 209.64 million) from the draft accounts submitted on 20 July is the most reliable recent cost, and taking into account the 2007 increase in staff salaries and ADSSC's requirement for additional staff, the Bureau proposes the following for the base level of opex in 2007, 2008 and 2009:

(a) 2007 opex is derived from 2006 opex by increasing annual staff costs (AED 58.96 million, as per **Table 3.4**) by 20% (or, equivalently, by increasing half-year staff costs by 40%) and by increasing remaining costs by the 2006 UAE CPI inflation (i.e. 9.29%). This gives AED 235.42 million (in 2007 prices) for 2007 opex.

(b) For 2008-2009, the base opex (in 2007 prices) is derived from 2006 opex by increasing staff costs by 40% and remaining costs by the 2006 UAE CPI inflation. This gives AED 247.22 million (in 2007 prices) for base opex for 2008-2009. Such base opex is then further subject to adjustments for demand growth and efficiency improvements as per the Bureau's methodology as discussed below.

Opex projections

3.30 Based on the Bureau's methodology, the base opex (in real prices) for 2008 and 2009 is then increased by 0.75% for each 1% increase in demand in the respective year and reduced by 5% per annum for expected efficiency improvement. Demand growth assumed is as per **Table 3.3** above. The resulting opex projections are presented in **Table 3.7** below:

Table 3.7: Opex projections for Final Proposals

Opex in AED million, 2005 prices		2005*	2006	2007	2008	2009
Base opex	**(AEDm)**	68.73	197.41	202.85	213.01	216.50
Average demand growth	(%)				9.32%	9.54%
Adjustment for demand growth	(%)				6.99%	7.16%
Adjustment for efficiency improvement	(%)				-5.00%	-5.00%
Opex allowance	**(AEDm)**	**68.73**	**197.41**	**202.85**	**216.50**	**220.40**

Source: Bureau calculations
Notes: For 2005, opex is only for 6 months from 1 July to 31 December 2005.

3.31 These opex projections are higher than those assumed in the Draft Proposals by about AED 3-21 million per year in real terms, or by 8.6%-10.7%, for 2008-2009. When adjusted for inflation, they imply opex in nominal prices of over AED 300 million by 2009.

3.32 In its letter of 31 October 2007, ADSSC accepted these projections but noted that they were exceptionally challenging.

Initial regulatory asset value (RAV)

Draft Proposals

3.33 Given the difficulties in determining an economic or market value of ADSSC's assets, and ADSSC's suggestion in response to the earlier consultation papers, the accounting asset value of AED 4,430.48 million as of 1 July 2005 as reported by ADSSC in its trial balance dated 5 June 2007 was used as the initial RAV in the Draft Proposals. However, it was stated that this figure will be reviewed upon receipt and review of the complete information submission and audited accounts from ADSSC.

ADSSC's Response to Draft Proposals

3.34 Following the Draft Proposals, ADSSC submitted its draft accounts for 2005-2006 via its letter of 20 July 2007. The notes to these accounts show a gross asset value of AED 8,670.346 million and an accumulated depreciation of AED 4,239.868 million, both as of 1 July 2005, thereby confirming the net opening asset value of AED 4,430.478 million as of 1 July 2005. In its response of 30 August 2007 to the Draft Proposals, ADSSC requested the Bureau to take account of its draft accounts while setting the initial RAV.

Final Proposal

3.35 In these Final Proposals, the accounting asset value of AED 4,430.48 million as of 1 July 2005 as reported by ADSSC in its draft accounts of 20 July 2007 has been used as the initial RAV. In case of any difference between this figure and the final audited accounts for 2005-2006, the Bureau will make a financial adjustment at the next price control review (taking account of time value of money and financing costs foregone or unduly earned).

Future capital expenditure

Draft Proposals

3.36 In view of the difficulties in applying an ex ante approach to capex regulation for ADSSC at present, the Bureaus' earlier consultation papers and ADSSC's responses to them considered an ex-post approach as more pragmatic at the present time in that it does not require an accurate forecast of future capex and can easily handle both anticipated and unanticipated investments.

3.37 The Draft Proposals therefore adopted an ex post approach for capex regulation, with provisional capex assumptions for the entire control period included in the first price control. At a future price control review, the audited actual capex over the control period will then be reviewed against the Bureau's efficiency criteria and an appropriate adjustment will be made to the RAV for any difference between the efficient past capex and the provisional capex allowed at this review.

3.38 For the Draft Proposals, the Bureau used the provisional capex projections shown in **Table 3.8**, which were derived as follows:

(a) For 2005-2007, the provisional capex was set as per ADSSC's submission.

(b) For 2008-2009, the provisional capex was set at a slightly higher level than 2007 but lower than ADSSC's projections.

Table 3.8: Provisional capex for Draft Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Provisional capex	379.01	151.10	412.76	500.00	500.00

Source: ADSSC's second information submission
Notes: *For 2005, capex is only for 6 months from 1 July to 31 December 2005.

ADSSC's Response to Draft Proposals

3.39 In its response to the Draft Proposals, other correspondence and at various meetings, ADSSC emphasised the deteriorating asset conditions of the sewerage system and hence a requirement for increasing future capex.

3.40 While the Bureau understands that there is presently a constraint on ADSSC's abilities to undertake significantly higher capex than the current levels, the Bureau proposed in its letter of 18 October to ADSSC to increase the provisional capex allowances for 2008-2009 compared to those in the Draft Proposals, to address ADSSC's concerns. ADSSC in its letter of 31 October welcomed this proposal. These revised provisional capex allowances have been adopted in these Final Proposals.

Final Proposals

3.41 **Table 3.9** shows the provisional capex allowances used in Final Proposals:

Table 3.9 : Provisional capex for Final Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Provisional capex	379.01	128.25	412.76	600.00	900.00

Source: Bureau proposal
Notes: *For 2005, capex is only for 6 months from 1 July to 31 December 2005.

3.42 For 2005-2007, the provisional capex allowances approximately remain the same as in the Draft Proposals and are based on the actual levels reported by ADSSC (although the latest trial balance for the first half of 2007 translated to an annualised basis indicates a much lower capex for 2007). The revised provisional allowances for 2008 and 2009 are about 50% higher (in real terms) than those for the immediately previous years (i.e. 2007 and 2008, respectively) and are higher by about 20% and 80% than the Draft Proposals for the respective years.

3.43 As a result, the provisional allowance for capex in 2009 is now over 7 times the level of capex incurred in 2006 in real terms. The Bureau does not consider that it would be prudent to allow a provisional capex in excess of this. In any case, these are provisional allowances and adjustments for differences between the provisional allowances and the actual efficient capex over this period will be made in future price control reviews.

3.44 As stated in earlier consultation papers, the provisional capex used in setting the price control is solely to facilitate the financing of capex and the smoothing of the price control from one period to another, and is not indicative of the Bureau's views of the appropriate or efficient level of capex. Once audited data on actual capex over the control period is made available to the Bureau, it will be reviewed against the efficiency criteria established by the Bureau for the sector. That is, capex will be considered efficient if it:

(i) was required to meet growth in customer demand or the relevant security and performance standards; and

(ii) was efficiently procured (procurement to be interpreted to include both the tendering process and project management).

3.45 An appropriate adjustment will be made to the RAV at a future price control review for any difference between the efficient past capex and the provisional capex allowed at this review, while taking account of the time value of money and the foregone financing costs (i.e. depreciation and return on capital).

Depreciation

Draft Proposals

3.46 Pending the receipt and review of any analysis/evidence from ADSSC supporting its argument for a weighted average asset life of no more than 25 years, the Draft Proposals adopted a straight-line depreciation method for all

ADSSC's assets with a weighted average life of 30 years for the initial RAV and 50 years for all investments after the date of establishment of ADSSC.

3.47 The following table shows the depreciation adopted for the Draft Proposals based on these depreciation assumptions, the initial RAV, and the provisional capex allowances:

Table 3.10: Depreciation for Draft Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Depreciation on initial RAV	73.84	147.68	147.68	147.68	147.68
Depreciation on investment (provisional capex) to date	3.79	9.09	14.73	23.86	33.86
Total depreciation	**77.63**	**156.77**	**162.41**	**171.54**	**181.54**

Source: Bureau calculations
Notes: *For 2005, depreciation is only for 6 months from 1 July to 31 December 2005.

ADSSC's Response to Draft Proposals

3.48 In its responses of 30 August and 6 September 2007 to the Draft Proposals, ADSSC argued that the Bureau's proposed asset life assumptions are excessive. ADSSC provided information on its existing assets to support its argument that its sewerage system and treatment facilities are generally 20 to 30 years old and are overstretched and in poor condition.

3.49 The asset life assumptions for existing and new assets were discussed at length at the 16 September meeting. In line with the Bureau's stated approach to match as closely as possible the actual outturn costs for 2005-2006, and as proposed by ADSSC in its letter of 8 October, the Bureau's letter of 18 October to ADSSC proposed to set the weighted average life of existing assets (i.e. for the opening 2005 RAV) equal to the remaining life implied by the draft audited accounts.

3.50 The resulting existing asset life is 13.6355 years, estimated by dividing the opening 2005 RAV of AED 4,430.48 million by the 18-month depreciation of AED 487.39 million during 2005-2006, and by 1.5 to adjust depreciation to a 12-month period.

3.51 For new assets, the Bureau remains satisfied with its weighted average life assumption of 50 years in the Draft Proposals. Such a weighted average figure for future asset lives was not contradicted by the data for asset lives of different asset classes presented in ADSSC's response of 6 September nor disputed by ADSSC at the 16 September meeting.

3.52 ADSSC in its letter of 31 October 2007 accepted the above proposals.

Final Proposals

3.53 In view of the above, a straight-line depreciation method for all ADSSC's assets with a weighted average life of 13.6355 years for the initial RAV and 50 years for all future investments has been adopted in these Final Proposals. **Table 3.11** shows the depreciation amounts used in the Final Proposals based on these depreciation assumptions and the provisional capex allowances:

Table 3.11: Depreciation for Final Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Depreciation on initial RAV	162.46	324.92	324.92	324.92	324.92
Depreciation on investment (provisional capex) to date	3.79	8.86	14.27	24.40	39.40
Total depreciation	**166.25**	**333.79**	**339.20**	**349.32**	**364.32**

Source: Bureau calculations

Notes: *For 2005, depreciation is only for 6 months from 1 July to 31 December 2005.

3.54 The depreciation on the initial RAV is the same as the depreciation on the existing assets in the draft accounts for 2005-2006. Capex incurred in a year is assumed to occur evenly throughout the year or, in other words, at the middle of the year (or at the middle of the 6-month period in the case of 2005). Therefore, for the year in which a capex is incurred, only half-year depreciation is taken. For later years, the depreciation for such capex is charged for the full year.

Projected regulatory asset values (RAVs)

Draft Proposals

3.55 To set a price control for a number of years, the opening and closing RAVs for each year need to be calculated. The closing RAV for a year is also the opening RAV for the next year. To calculate these RAVs, the Bureau has used an approach similar to the one used for the water and electricity companies to date. That is, the closing RAV for each year of the control period is calculated from the opening RAV for that year by:

(a) adding the provisional capex for that year; and

(b) subtracting:

(i) the depreciation on initial RAV; and

(ii) the depreciation on provisional capex for that year and earlier years.

3.56 The following table presents the opening and closing RAVs for ADSSC for each year of the control period (2005-2009), which were derived in the Draft Proposals:

Table 3.12 : Projected RAVs for Draft Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Opening RAV	4,430.48	4,731.86	4,726.19	4,976.53	5,304.99
Add: Provisional capex	379.01	151.10	412.76	500.00	500.00
Less: Depreciation on initial RAV	73.84	147.68	147.68	147.68	147.68
Less: Depreciation on provisional capex to date	3.79	9.09	14.73	23.86	33.86
Closing RAV	4,731.86	4,726.19	4,976.53	5,304.99	5,623.45

Source: Bureau calculations
Notes: *For 2005, depreciation is only for 6 months from 1 July to 31 December 2005.

Final Proposals

3.57 Due to changes in the provisional capex allowances and in the depreciation assumption for the existing assets, the opening and closing RAVs for ADSSC over the control period (2005-2009) have been revised as follows in these Final Proposals:

Table 3.13 : Projected RAVs for Final Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Opening RAV	4,430.48	4,643.24	4,437.70	4,511.27	4,761.94
Add: Provisional capex	379.01	128.25	412.76	600.00	900.00
Less: Depreciation on initial RAV	162.46	324.92	324.92	324.92	324.92
Less: Depreciation on provisional capex to date	3.79	8.86	14.27	24.40	39.40
Closing RAV	4,643.24	4,437.70	4,511.27	4,761.94	5,297.62

Source: Bureau calculations
Notes: *For 2005, depreciation is only for 6 months from 1 July to 31 December 2005.

3.58 All the above calculations have been carried out in 2005 prices. The provisional capex allowances from **Table 3.9** and the depreciation allowances for both initial RAV and provisional capex calculated in **Table 3.11** have been used in the above table.

3.59 The RAV increases from AED 4.4 billion in 2005 to AED 5.3 billion by end of 2009 in 2005 prices (i.e., by about AED 867 million, or 19.6% in real terms). However, these RAVs (except for the 2005 opening RAV) are lower than those in the Draft Proposals due to faster depreciation (i.e. larger depreciation allowance) of existing assets in the Final Proposals.

Cost of capital

Draft Proposals

3.60 The Draft Proposals and earlier consultation papers explained in detail the Bureau's approach to the calculation of the allowed rate of return or cost of capital for price controls. These papers used the same standard approach to calculate the real, post-tax weighted average cost of capital (WACC) for ADSSC as that currently employed for water and electricity companies i.e. – the Capital Asset Pricing Model (CAPM). The Bureau's cost of capital calculations have drawn heavily on the latest estimates of cost of capital components used by regulators of similar businesses in the UK and Australia subject to a similar regulatory regime. However, these were cross-checked against the information available from local and regional capital markets in order to capture any particular factors that may be specific to the businesses operating in Abu Dhabi. ADSSC's earlier responses to the consultation papers were supportive of this approach.

3.61 The Bureau used a real, post-tax cost of capital of 5.00% for the price control calculations in the Draft Proposals – the same as used by the Bureau for its PC3 review for water and electricity companies. However, the Draft Proposals also provided evidence to show that recent overseas regulatory decisions and local capital market developments (particularly recent higher credit ratings for the UAE and a subsidiary of ADWEA) suggest a lower cost of capital.

Final Proposals

3.62 In the absence of any objection to the Draft Proposals, the Bureau has retained a real, post-tax cost of capital of 5.00% for the price control calculations in the Final Proposals – the same as used by the Bureau for its PC3 review for water and electricity companies.

4. Price control calculation

Framework for price control calculations

4.1 As explained in the Draft Proposals and earlier consultation papers, the Bureau has used the net present value (NPV) framework for price control calculation and calibration of MARs over the control period. In essence, the price control calculation involves, in real terms (2005 prices), equating the NPV of the required revenues (that which would be sufficient to finance an efficient business) to the NPV of forecast revenues based on the MAR formula over the control period (2005-2009):

NPV of projected annual MARs = NPV of Required Revenues

4.2 The revenue requirement or the notified value 'a' for each year of the control period is calculated using the "building block approach" as follows:

Required Revenue = Opex + Depreciation + Return on RAV

where:

(a) operating expenditure (opex) refers to operating costs excluding depreciation;

(b) depreciation refers to the depreciation on both initial RAV and provisional capex to date; and

(c) RAV is the mid-year average of opening and closing Regulatory Asset Values (RAVs).

4.3 The projections of the components of required revenue for the entire control period (2005-2009) in 2005 prices are discussed in Section 3 of this document.

4.4 The annual MAR is calculated by using the following formula presented in Section 2 of this paper:

$$\mathbf{MAR_t = a_t + Q_t - K_t}$$

where, Q and K have been set to zero for the price control calculations.

4.5 The value of ‘a’ has been determined by equating the NPV of MARs to the NPV of required revenues over the control period, while setting X equal to zero.

4.6 All the above calculations have been carried out in real terms, that is, in 2005 prices. A real, post-tax cost of capital of 5.00% (see Section 3) has been used in price control calculations both as the discount rate for NPV calculations and as the rate of return to calculate return on RAV.

4.7 The Bureau has used MS Excel software to model the above calculations. To equate the NPVs, the Bureau has used the “solver” (an optimisation tool in Excel). The Excel model is being forwarded to ADSSC with this document and is available from the Bureau on request.

Price control calculation

4.8 **Annex A** to this document presents the detailed price control calculation for ADSSC. The calculation has been explained in detail in the Draft Proposals with reference to the Line numbers used in this annex and in the Excel model.

4.9 The main outputs of the price control calculations are the annual revenue requirements, the notified value ‘a’, and the projected annual MARs over the control period. Two financial indicators, namely the implied annual profits and return on capital have been calculated to assess the financial viability of the company as a result of the price control calculations.

Summary results of price control calculations

Notified values

4.10 Based on the price control calculations explained above, the Bureau’s Final Proposals for the notified values for ADSSC are summarised in **Table 4.1** below. These proposals are the same as calculated in Annex A to this paper. The notified values given in **Table 4.1** (to the accuracy to decimal places expressed therein) will be those used to calculate MARs when the price control are implemented and incorporated into ADSSC’s licence.

Table 4.1: Notified values – Final Proposals

2005 prices	**X**	**a**
ADSSC	0.00	AED 776.72 million

Source: Bureau calculations

4.11 The above notified value 'a' is higher by about AED 171 million per year, or by 28%, in real terms than that in the Draft Proposals (which was AED 606.16 million).

4.12 For 2005, the notified value 'a' will be one-half of the value shown in the above table to reflect the 6-month period in 2005 after the establishment of ADSSC (i.e., AED 388.36 million).

Projected allowed revenues

4.13 **Table 4.2** presents the projected MAR for ADSSC over the control period (2005-2009) resulting from the price control calculations in these Final Proposals:

Table 4.2: Projected MAR over 2005-2009 (2005 prices) – Final Proposals

AED million, 2005 prices	2005*	2006	2007	2008	2009
Allowed revenue	388.36	776.72	776.72	776.72	776.72

Source: Bureau calculations
Notes: *The data for 2005 relates to 6-month period from 1 July to 31 December 2005.

4.14 To indicate the approximate actual revenue that ADSSC would earn, **Table 4.3** shows the projected MARs for 2005-2007 in nominal prices based on the UAE CPI inflation for those years presented in Section 2 of this paper.

Table 4.3 : Projected MAR over 2005-2009 (nominal prices) – Final Proposals

AED million, nominal prices	2005*	2006	2007	2008	2009
Allowed revenue	388.36	824.84	901.43	982.56	1,061.17

Source: Bureau calculations
Notes: *The data for 2005 relates to 6-month period from 1 July to 31 December 2005.

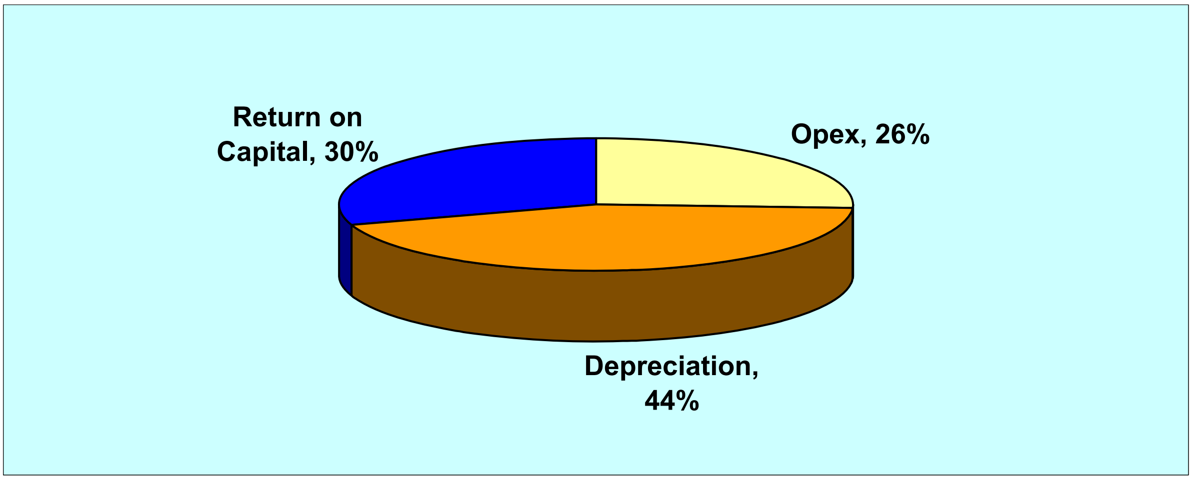
4.15 For 2006 onwards, the notified value 'a' equal to AED 824.84 million has been used in the licence modification being issued with these Final Proposals for the ease of operation of the CPI indexation mechanism.

Analysis of the Final Proposals

Constituents of projected MARs

4.16 The choice of the building-block approach for calculating the required revenue is intuitive in that it helps identifying the important constituents of revenue; that is, opex, depreciation and return on capital. **Figure 4.1** below presents the percentage breakdown of total revenue into projected opex, depreciation and profits in NPV terms for ADSSC:

Figure 4.1: Constituents of projected MAR – Final Proposals



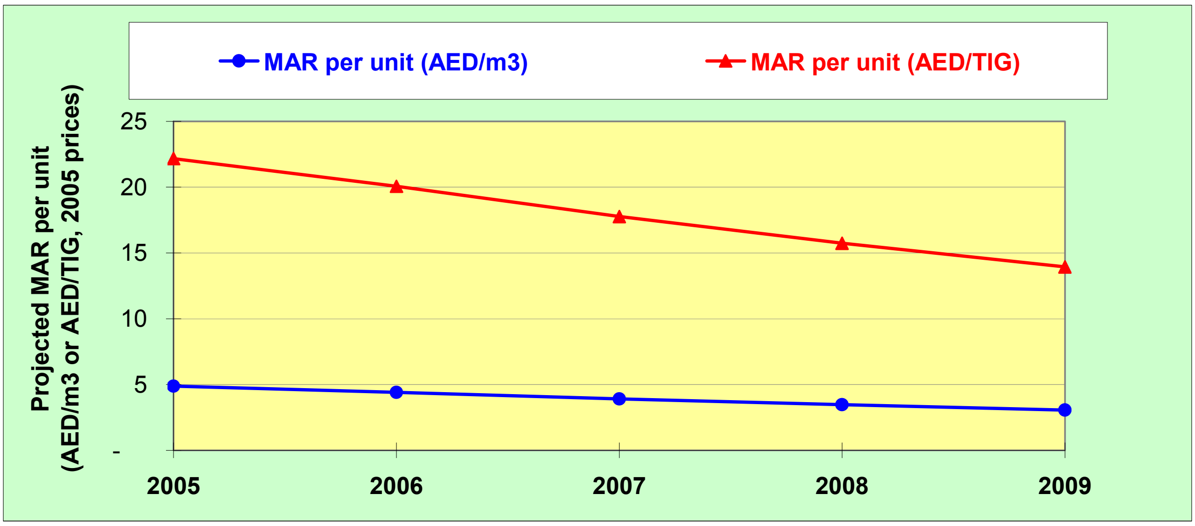
4.17 This figure shows that depreciation and return on capital account for a significant proportion of the revenue for ADSSC (about 74%). This highlights the capital intensity of ADSSC's business.

4.18 Overall, ADSSC's profits are expected to be of the order of AED 238 million (2005 prices) a year on average over the control period.

Effect of Draft Proposals on unit cost

4.19 **Figure 4.2** shows the expected effect of these Final Proposals on the price-controlled costs per unit of sewage collected:

Figure 4.2: MAR per unit sewage collected – Final Proposals (in 2005 prices)



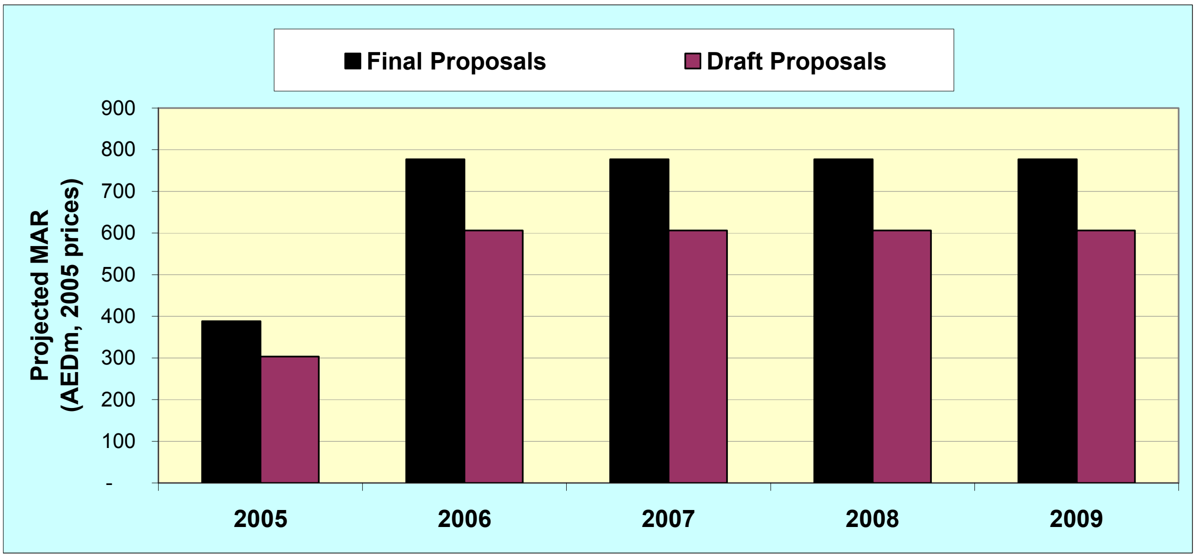
4.20 While the annual MARs are constant in real terms over the control period, the increasing demand means that the Final Proposals are expected to result in a declining trend for unit cost. This shows that, as a result of the Final Proposals, the unit cost of sewage collected is expected to be 3.07 AED/m^3 or 13.94 AED/TIG (in 2005 prices) in 2009, lower by 37% than the 4.88 AED/m^3 or 22.17 AED/TIG (in 2005 prices) in 2005.

Comparison against the Draft Proposals

Comparison of Projected MARs

4.21 As shown in **Figure 4.3** below, the estimates of annual MARs in these Final Proposals are higher by about AED 171 million per year in real terms (by about AED 181 to 233 million per year in nominal prices), or by 28%, than those estimated in the Draft Proposals for the respective years.

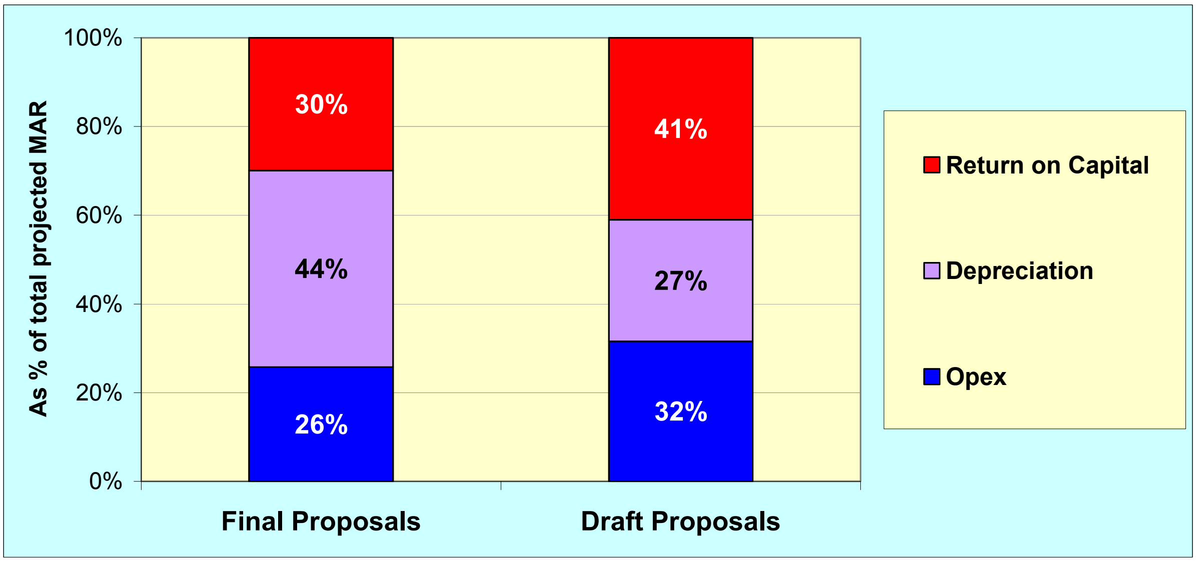
Figure 4.3: Comparison of Projected MARs (in 2005 prices)



Comparison of Components of Projected MARs

4.22 **Figure 4.4** below compares the composition of projected MAR (in NPV terms over the control period) in the Final Proposals against the Draft Proposals and highlights the capital intensity of ADSSC's business.

Figure 4.4: Comparison of Projected MARs (in 2005 prices)

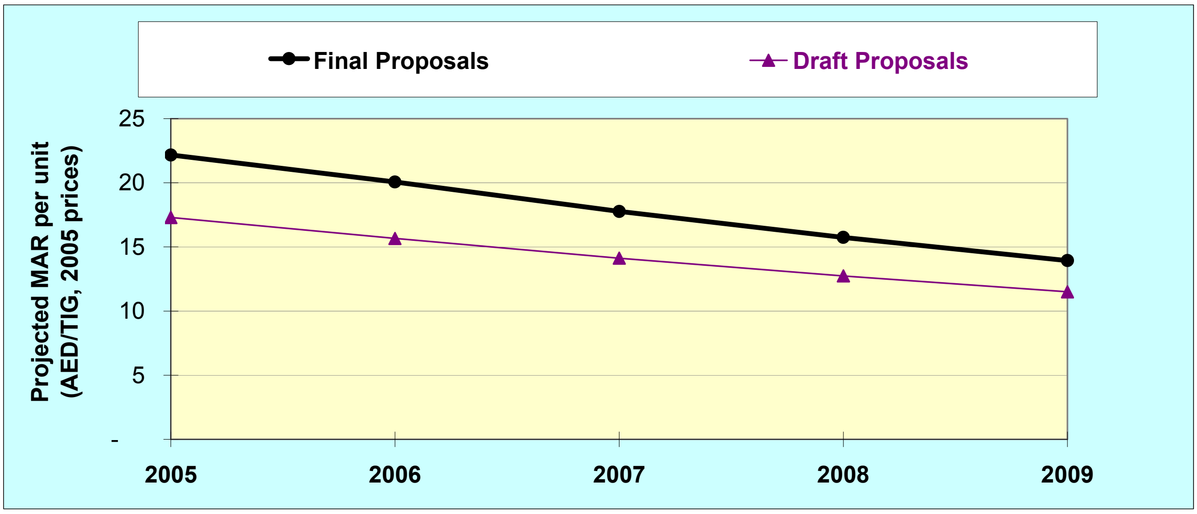


4.23 The depreciation component (44%) in the Final Proposals is higher than that in the Draft Proposals (27%) due to faster depreciation of existing assets in the Final Proposals. For the same reason, the return on capital component is relatively lower (30% in the Final Proposals compared to 41% in the Draft Proposals), due to the effect of the higher depreciation allowance on the RAV. Overall, these two components now make a higher proportion (74%) of revenue than in the Draft Proposals (68%).

Comparison of Projected MAR per unit

4.24 Consistent with the comparison of projected MARs, **Figure 4.5** below shows that the Final Proposals would result in higher MAR per unit of sewage collected than the Draft Proposals by about 25%.

Figure 4.5: Comparison of Projected MARs (in 2005 prices)



4.25 However, both the Draft Proposals and the Final Proposals show a declining trend for unit cost due to increasing demand over the control period.

5. Performance Incentive Scheme

Introduction

5.1 As discussed in Section 2, a Performance Incentive Scheme (PIS) will link the MAR of ADSSC to important aspects of its performance. The PIS has two types of performance indicators:

(a) Category A indicators with precise definitions, targets and incentive rates, and an automatic annual revenue adjustment for performance via a term "Q" in the MAR formula, subject to a 4% cap; and

(b) Category B indicators, less precisely defined but subject to a possible financial adjustment at the next price control review, depending on ADSSC's performance over the control period, subject to a 2% cap.

5.2 It is proposed that the PIS will take effect for the submissions due in 2008 onwards. That is:

(a) For Category A indicators, the MAR will be adjusted for the first time in 2009 via the Q term for performance on submission of audited accounts, audited PCR and AIS during 2008[3]; and

(b) For Category B indicators, the performance during 2008-2009 will be assessed and ADSSC will be rewarded or penalized for its good or poor performance at the 2009 price control review.

5.3 As discussed below, the precise design of the PIS remains the same as in the Draft Proposals. The only change in these Final Proposals is the revised incentive rates for Category A indicators due to higher projected MARs.

5.4 ADSSC in its response of 30 August 2007 to the Draft Proposals has accepted the PIS. ADSSC suggested that any penalties (or bonuses) under the PIS should apply from the day when a statement for the relevant Category A indicator is received instead of the last day of the month in which it is received as proposed in the Draft Proposals. The latter mechanism has

[3] For consistency with the design of scheme for other licensees, in the case of AIS, the MAR will be adjusted for the first time in 2010 via the Q term for submission of 2008 AIS in 2008. The basic principle is that the adjustment for any submission will be made two years after the year to which the submission relates.

however been retained in these Final Proposals to ensure simplicity of PIS operation and consistency with PIS for the water and electricity companies in the sector. It also reflects the fact that in each case the submission is due on the final day of the month in any case and there is no benefit from an earlier submission.

Category A performance indicators

Definitions and Targets

5.5 The proposed PIS has three Category A indicators:

(a) timeliness of audited separate business accounts;

(b) timeliness of audited PCRs; and

(c) timeliness of AIS together with a Technical Assessor's report.

5.6 Performance of ADSSC on each of these indicators will be assessed in terms of the difference (measured in months) between the actual date of submission of these items and the licence due date. ADSSC's licence already defines the target dates for submission of audited accounts (30 June). The target dates for submission of AIS (including the associated Technical Assessor's report) and the audited PCR are proposed to be 30 September and 31 March, respectively, consistent with the water and electricity companies.

Technical Assessor for AIS

5.7 The AIS will contain both historical data and future forecasts of financial and non-financial (technical) items relating to ADSSC and its system. The information and data contained in the AIS is important for the efficient regulation of ADSSC by the Bureau, particularly in understanding its system development and in setting appropriate price controls in future. The accuracy of such information is therefore of significant importance. As with the water and electricity companies, ADSSC will be required to commission a statement by a suitably-qualified independent organisation approved by the Bureau (to be termed "Technical Assessor"), verifying the accuracy of the data contained in the AIS.

5.8 The role of Technical Assessor will be defined precisely within the proposed licence modification that will accompany the Final Proposals. The key features of this arrangement will be as follows:

(a) Technical Assessors will be expected to be consulting engineers. They must be independent of ADSSC (i.e., no conflict of interest) and their appointment will be subject to the prior written approval of the Bureau.

(b) Technical Assessors will be asked to expose, examine and challenge all material assumptions underlying the AIS, in the form of a formal report.

(c) While appointed by ADSSC, the Technical Assessor's duty of care will be to the Bureau, with the primary objective of assisting the Bureau to fulfil its statutory duties.

Incentive rates for Category A indicators

5.9 The incentive rate is the amount (in AED per month) of reward or penalty that ADSSC will be subject to via the Q term of MAR formula for being early or late in its submission of audited accounts, audited PCR or AIS compared to the relevant target dates.

5.10 In these Final Proposals, the Bureau has calculated the incentive rates for Category A indicators based on the approach it used at the previous price control reviews for the water and electricity companies and adopted in the Draft Proposals. That is:

(a) First, determine the total amount "at risk" for Category A indicators as a whole (the total maximum penalty or reward) according to the cap on the Q term (4% of the average forecast MAR for the control period).

(b) Second, the resulting amount is equally apportioned between all the Category A indicators.

(c) Third, the incentive rate for each indicator is derived by dividing the relevant amount apportioned as above by the variance between target performance and performance of a 6 month delay beyond the target date. That is, for calculation of incentive rates, the Bureau assumes a 6 month delay as the worst possible performance in submission on Category A indicators.

5.11 The following table shows the calculation of the incentive rates for PIS Category A indicators (rounded off appropriately):

Table 5.1: Incentive rate calculation for Category A – Final Proposals

Average MAR	777 AED million
Total amount at stake for Category A	31.07 AED million
Number of Category A indicators	3
Amount at stake for each indicator	10.36 AED million per indicator
Worst case performance on each indicator	6 months delay
Incentive rate for each indicator	1,730,000 AED / month

Source: Bureau calculations

5.12 It is important to note that the above assumptions are purely hypothetical and used only for the purpose of the initial calibration of the PIS (calculating the incentive rates) and play no further role in the implementation of the scheme.

5.13 The following table summarizes the proposed target dates and incentive rates (in terms of penalty per month of delay) for Category A indicators. The bonus for submitting the item on or before the relevant target date will be six times the monthly penalty rate i.e., AED 10.38 million per indicator. That is, the total bonus that ADSSC can earn in any year can be as high as AED 31.14 million on Category A indicators.

Table 5.2: Target dates and Incentive rate for Category A – Final Proposals

Category A indicator	Target Date	Incentive Rate
1. Audited accounts timeliness	30 June each year	1,730,000 AED / month
2. Audited PCR timeliness	31 March each year	1,730,000 AED / month
3. AIS timeliness	30 September each year	1,730,000 AED / month

Source: Bureau

5.14 The above incentive rates are higher by 28% than those in the Draft Proposals (1,350,000 AED / month) due to higher projected MARs in these Final Proposals.

Operation of PIS for Category A

5.15 Consistent with the PIS for the water and electricity companies, the PIS for ADSSC will operate as follows:

5.16 The term Q_t, the performance adjustment to MAR for year t, is calculated in AED terms as follows:

$$Q_t = Q1_t + Q2_t + Q3_t$$

where $Q1_t$, $Q2_t$ and $Q3_t$ are the revenue adjustments for the timeliness of submission of audited accounts, audited PCR and AIS, respectively, related to the year 't-2'. That is, the performance of ADSSC on Category A indicators will be rewarded or penalized through the Q term two years after the year to which the respective statements relate.

5.17 So, for example, the first year of performance assessment will be for performance in the year 2008. In 2008, the company will submit the audited accounts and PCR related to the 2007 financial year, as well as the 2008 AIS. In the case of audited accounts and audited PCR (related to 2007 financial year), the performance adjustment will be made in 2009 via the Q term. For 2008 AIS, the adjustment will be in 2010. This is consistent with the operation of the scheme for other licensees.

5.18 The following sub-paragraphs describe the Bureau's proposed formulae to determine the Q terms for the Category A indicators. These formulae are structured so that the Q term will automatically take a positive sign if a reward is required (i.e., actual performance is better than the target) and a negative sign if a penalty is required (i.e., actual performance is below the target).

(a) For any delay beyond the target date in any year, the company will receive a penalty calculated as follows:

Q Term = - Incentive Rate × Number of months of delay from target date

(b) For any submission on or before the target date in any year, the company will receive a reward calculated as follows:

Q Term = 6 × Incentive Rate

(c) The number of months shall be rounded up to whole calendar months. That is, the submission will effectively be treated as having been received on the last day of the month in which it was received.

(d) The maximum delay in any timeliness related Category A indicator will be capped at the penalty that would be incurred if the statement is submitted on the target date for the same indicator for the following year. Such a cap is required in order to finalise the Q terms for these indicators in a timely manner. This effectively means the maximum penalty for a timeliness indicator will be capped by a delay of 12 months. That is, the maximum penalty will be:

Q Term = - 12 × Incentive Rate

5.19 In any year, the absolute value of Q term (which can be positive or negative) summed across all three indicators will not exceed 4% of the MAR for that year.

5.20 The Q term will be zero for 2005, 2006, 2007 and 2008. The first year when Q term will take a non-zero value (through Q1 and Q2 terms) will be 2009 and will be determined in relation to the audited accounts (for 2007) and audited PCR (for 2007) to be submitted in 2008. That is, the first year when the performance of ADSSC on Category A will be assessed will be 2008. However, the Q3 term (which relates to AIS) will be zero for 2009. The first year when the Q3 term will take a non-zero value will be 2010 and will be determined in relation to the 2008 AIS to be submitted in 2008.

5.21 The above mechanism is contained in the licence modification being issued to ADSSC with the Final Proposals. Q factors relating to performance in the previous price control period will be carried over into the subsequent price controls as necessary.

Category B performance indicators

5.22 Consistent with the Draft Proposals, the following Category B indicators have been adopted in these Final Proposals to be monitored over the control period:

(a) performance of sewerage system (e.g., availability and reliability);

(b) customer complaints (e.g., in relation to odour and flooding);

(c) performance against guaranteed service standards for customers;

(d) compliance with standards at treatment plants;

(e) meeting targets for recycling of treated effluent and biosolids;

(f) environmental performance;

(g) timeliness of annual preparation of five-year planning statement; and

(h) timeliness of interim profit and loss account.

5.23 Good or poor performance of ADSSC on these measures will be assessed at the next price control review with a possible positive or negative adjustment to the future price control, subject to a cap of 2% of MAR in any year.

Annex A: Price control calculations

	Main Inputs			2005 (HY)	2006	2007	2008	2009
1	Opex allowance	AEDm, 2005 prices		68.73	197.41	202.85	216.50	220.40
2	Opening RAV	AEDm, 2005 prices		4,430.48	4,643.24	4,437.70	4,511.27	4,761.94
3	Closing RAV	AEDm, 2005 prices		4,643.24	4,437.70	4,511.27	4,761.94	5,297.62
4	Mid-point RAV	AEDm, 2005 prices		4,536.86	4,540.47	4,474.48	4,636.60	5,029.78
5	Total depreciation	AEDm, 2005 prices		166.25	333.79	339.20	349.32	364.32
6	Cost of capital (real)	%	5.00%					
7	X factor	%	0.00%					

	Revenue Requirement Calculations			2005 (HY)	2006	2007	2008	2009
8	Opex allowance	AEDm, 2005 prices		68.73	197.41	202.85	216.50	220.40
9	Total depreciation	AEDm, 2005 prices		166.25	333.79	339.20	349.32	364.32
10	Return on mid-point RAV	AEDm, 2005 prices		113.42	227.02	223.72	231.83	251.49
11	**Annual revenue requirement**	**AEDm, 2005 prices**		**348.41**	**758.22**	**765.77**	**797.66**	**836.21**

	Notified Value Calculations			2005 (HY)	2006	2007	2008	2009
12	Annual revenue requirement	AEDm, 2005 prices		348.41	758.22	765.77	797.66	836.21
13	Discounted annual revenue requirement	AEDm, 2005 prices		344.18	722.11	694.58	689.05	687.95
14	NPV of revenue requirement at 30 June 2005	AEDm, 2005 prices	**3,137.88**					
					Variable for Solver			
15	Notified value 'a'	AEDm, 2005 prices	**776.72**					
16	Annual MAR	AEDm, 2005 prices		388.36	776.72	776.72	776.72	776.72
17	Discounted annual MAR	AEDm, 2005 prices		383.65	739.74	704.51	670.96	639.01
18	NPV of MARs at 30 June 2005	AEDm, 2005 prices	**3,137.88**					
19	Difference between NPVs	AEDm, 2005 prices	**0.00**		Target for Solver (zero)			
20	**Notified Value**	**AEDm, 2005 prices**		**388.36**	**776.72**	**776.72**	**776.72**	**776.72**

	Implied Financial Indicators		Average	2005 (HY)	2006	2007	2008	2009
21	Annual revenue	AEDm, 2005 prices	**776.72**	388.36	776.72	776.72	776.72	776.72
22	Annual revenue	AEDm, nominal prices	**909.35**	388.36	824.84	901.43	982.56	1,061.17
23	Implied annual profit	AEDm, 2005 prices	**237.97**	153.38	245.53	234.67	210.90	192.00
24	Implied return on mid-point RAV	% p.a.	**5.16%**	6.76%	5.41%	5.24%	4.55%	3.82%